MVG 400

System Guide

SerVision

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Introduction

The SerVision MVG 400 unit is a compact video gateway that provides state-of-the-art security functionality for vehicles and other moving platforms. Its broad range of features include live video streaming, video recording and playback, motion detection, sensor management, real-time event notification, vehicle tracking via GPS, and device activation. All of these features can be accessed remotely via PC, PDA, or cellular telephone.

The MVG 400 contains two interconnected hardware components:

- A video gateway that handles the unit's security functionality
- A router that makes it possible to access the unit remotely over a standard cable-based internet connection, a cellular network, or a wireless (WiFi) connection

This guide explains how to set up, configure, and use the MVG 400 system. The following topics are covered:

- Package contents (page 6)
- Setting up the system (page 10)
- Configuring the system (page 36)
- Connecting to the system through the PC client software (brief overview; page 146)
- Viewing snapshots from cameras via the internet in real-time without using the client software (page 149)
- Viewing live video on a closed-circuit (CCTV) monitor (page 152)
- Resetting the unit (page 154)
- Updating the firmware on the unit (page 163)
- Diagnosing problems (page 172) and troubleshooting (page 183)

About Client Software

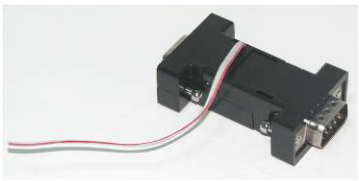
Client software is used for accessing the MVG 400 unit remotely in order to view video and events and control the system in various ways. This guide includes a general overview of the **MultiClient**, SerVision's PC-based client software. SerVision also offers client software for certain cellular telephone and PDA models. Full instructions for the use of the client applications are available in separate manuals:

- *MultiClient User Guide*
- *Windows Mobile Client (SVClientCE) User Guide*
- *Symbian S60 Client User Guide*
- *Symbian UIQ Client User Guide*

Contact your vendor if you require any of these manuals or download them at http://www.servision.net.

The MVG 400 Package

The MVG 400 package contains the following items:

Item	Description	Illustration
MVG 400 unit	Video gateway	
Power supply cable	Connects the unit to an electrical outlet	
Power cord	Connects the unit to the vehicle battery via the cigarette lighter	
Ethernet (LAN) cable	Connects the unit to a PC (or a cable-based local network)	
RS232/485 serial adapter	Connects PTZ controllers to the unit	

Item	Description	Illustration
GPS antenna	Enables the built-in GPS receiver to connect to satellites	
2 supports	Used to install the unit in the vehicle	
4 screws	Used to connect the supports to the unit	
4 washers	Used to connect the supports to the unit	

Additional Equipment

Up to four video cameras can be connected to the MVG 400. You must acquire the cameras you require; they are not included in the MVG 400 package. For information about camera compatibility and about connecting the cameras to the unit, see *Connecting Cameras*, page 15, or consult your vendor.

In addition to the cameras, you may wish to incorporate some or all of the optional equipment listed below into your security system. For additional information about these items and the cables required to connect them, please refer to the installation instructions for each type of device.

NOTE: This equipment is not included in the MVG 400 package.

- Cellular modem with USB adaptor (see *Connecting the MVG 400 to an External Network*, page 26)

  Note: Not all cellular modems are supported. Please contact your supplier for a list of supported cellular modems.

- WiFi card with USB adaptor (see *Connecting the MVG 400 to an External Network*, page 26)

  Note: Not all WiFi cards are supported. Please contact your supplier for a list of supported WiFi cards.

- Up to 20 dry-contact sensors (see *Connecting Sensors*, page 17)

  Note: Up to four dry-contact sensors can be connected directly to the MVG 400 unit. If you use an ADAM module, as described below, you can connect an additional 16 dry-contact sensors via the unit's RS232 connector.

- ADAM Data Acquisition Module and ADAM isolated RS232->RS422/RS485 converter, for connecting up to 16 dry-contact sensors (see *Connecting Sensors*, page 17)

  To connect the module to the converter, the unit, and the power supply, you will need:

  - Red, black, yellow, and green wire
  - Flat ribbon cable with D-type 9-pin female connector on one end and a D-type 9-pin male connector on the other end
  - An electrical plug

- Up to two dry-contact activators (alarms or other devices that are turned on or off in response to the activation of a sensor; see *Connecting Activators*, page 22)

  To connect each activator to the unit, you will need:

  - 16 AWG red and black cable

- Up to two microphones (see *Connecting Microphones*, page 23)

- Speaker or headphones (the unit already contains a built-in speaker; see *Connecting a Speaker or Headphones*, page 24)
- CCTV monitor for closed-circuit video display (see *Connecting a CCTV Monitor*, page 24)
- A push-button switch to change the display in a connected CCTV monitor (see *Connecting a Switch*, page 25)
- A toggle (on-off) switch to change the active outline (see *Connecting Sensors*, page 17).

Installing the MVG 400 System

These are the steps that you will typically follow in order to install the MVG 400 system:

1. Install the MVG 400 unit in its desired location using the supplied supports.
2. Install the video cameras in their desired locations.
3. Install up to 20 sensors in their desired locations (optional).

   Note: Four of these can be connected directly to the unit; the other 16 must be connected through an ADAM module; see *Connecting Sensors*, page 17.
4. Install a toggle switch to change the active outline (optional).
5. Install up to two activators in their desired locations (optional).
6. Install a CCTV monitor in its desired location (optional).
7. Install a push-button switch to change the display on the CCTV monitor, if one is connected to the unit (optional).
8. Connect the cameras, sensors, activators, monitor, and switches to the MVG 400, as required; see *Connecting Devices to the* MVG 400, page 14.
9. Install the **MultiClient** software on a PC in order to connect to the unit's configuration utility; see *Installing the MultiClient*, page 33.
10. Connect the MVG 400 unit to the PC; see *Before You Begin*, page 36.
11. Connect the MVG 400 unit to a power source; see *Connecting the MVG 400 to a Power Source*, page 28.
12. Configure the MVG 400 system; see *Configuring the* MVG 400, page 36.
13. Connect to the MVG 400 through the **MultiClient** in order to check the configuration and make sure the system is working properly; see *Connecting to the MVG 400*, page 146.
14. Install the MultiClient software on any other PC from which you want to connect to the MVG 400, as required.
15. Install the PDA and/or cellular phone client applications on your PDA and/or cellular telephone, as required. For additional information, see the client user guides or contact your vendor. The client applications, as well as the user guides, can be downloaded from the SerVision website (http://www.servision.net).

NOTE: The unit, the devices connected to it, and the cables used to connect them, must all be securely fastened to the vehicle to ensure they do not become detached from their locations when the vehicle is in motion.

NOTE: Installing the unit and its peripheral equipment in a vehicle is a complex process. It is highly recommended that it be performed by a trained specialist in vehicle installations.

Installing the Unit

The unit should be installed in a cool and ventilated location, protected from direct sunlight and water. It should be firmly secured to ensure it does not move around when the vehicle is in motion; if the unit is dislodged from its location in the vehicle, it may be damaged, hit people in the vehicle, or harm other items with which it comes into contact.

Ensure the unit has at least a few centimeters (1–2 inches) of space above it and on all sides for ventilation.

When choosing a location for the MVG 400, bear in mind that the unit must be connected to the vehicle battery and ignition (if required), and that other devices (cameras, sensors, PC, etc.) must be connected to it. Choose a location in which these connections are feasible.

NOTE: To install the unit in the vehicle, you will need screws to secure the unit to its anchoring surface (not supplied; see step 2 below).

⇨ *To install the MVG 400:*

1. Connect the two side supports to either side of the bottom of the MVG 400, using two screws and two washers for each support. (The screws and washers are included with the MVG 400.)

Figure 1 - Side support

Figure 2: Supports attached to bottom of the MVG 400

2. Place the unit in the desired location and attach it securely by connecting the side supports to the anchoring surface with two or three screws on each side. (These screws are not included with the MVG 400.)

   Note: The unit can be placed horizontally or vertically. If it is placed vertically, it does not matter which side faces up.

Diagram of the Rear Panel

The rear of the MVG 400 unit contains the connectors and controls described below.

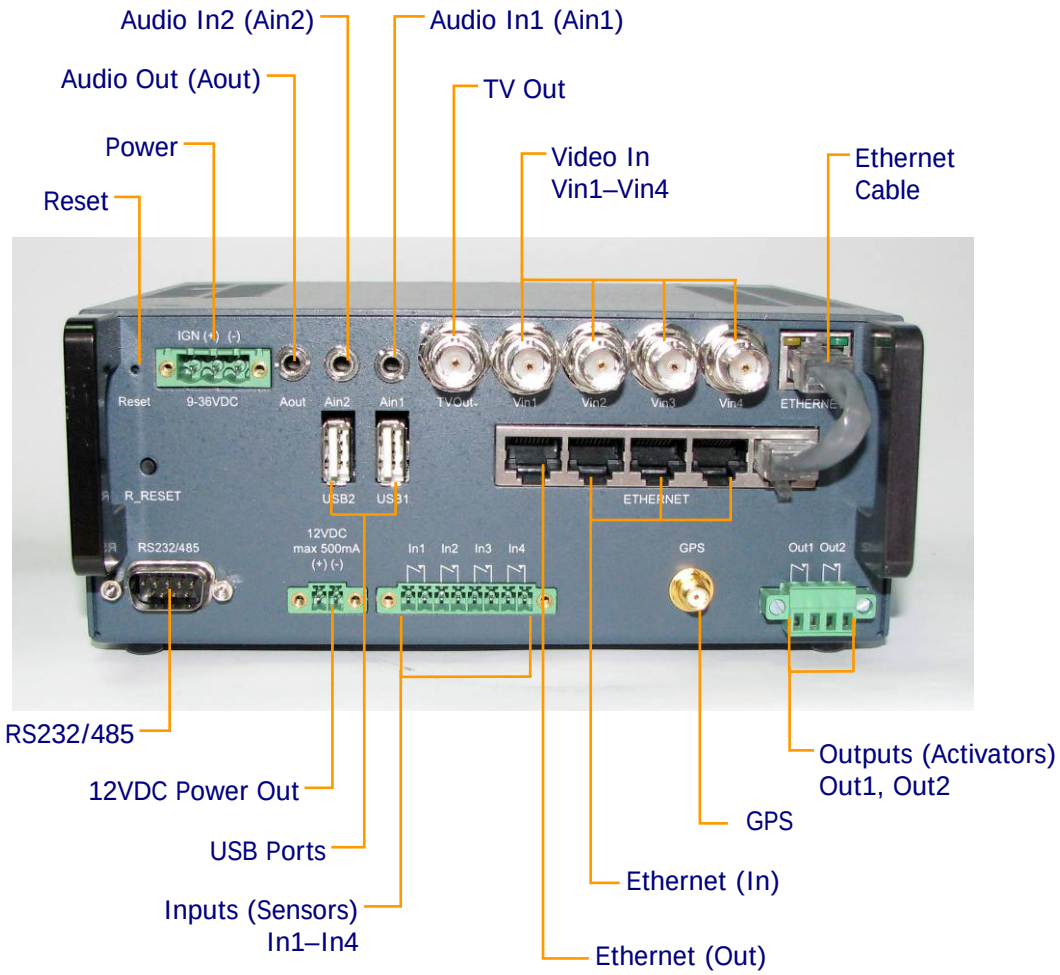


Figure 3: MVG 400 connectors and controls

Connector/Control	Description
Reset	**Reset** button. Use a pin to press the button when it is necessary to reset the unit manually. Note: Your configuration settings will not be lost during a reset.
Power	Connector for the power supply and, if required, for the ignition connection (see page 28)
Audio Out (Aout)	Connector for an external speaker or headphones (see page 24)
Audio In2 (Ain2)	Connector for an active microphone (see page 23)
Audio In1 (Ain1)	Connector for a passive microphone (see page 23)
TV Out	Connector for a CCTV monitor (see page 24)
Video In (Vin1–Vin4)	Connectors for video cameras (see page 15)
Ethernet Cable	Cable connecting the video gateway component of the MVG 400 to the unit's router. Do not disconnect.
RS232/485	Serial (COM) port for PTZ controllers (see page 16), ADAM modules (see page 18), and/or technicians' use
12VDC Power Out	Supplies power to external devices (cameras, sensors, etc.) Note: The unit can supply up to 500 mA of power.
USB Ports	Connectors for WiFi cards or cellular modems with USB adaptors (see pages 65 and 68)
Inputs (In1 – In4)	Sensor connectors (see page 17)
Ethernet (Out)	10/100 Base-T LAN connector for connecting the unit to an external network (LAN or WAN; see page 26.)
Ethernet (In)	Three 10/100 Base-T LAN connectors for connecting other devices to the internal network managed by the router (see page 27)
GPS	GPS antenna connector
Outputs (Out1, Out2)	Activator connectors (see page 22)

Connecting Devices to the MVG 400

This section explains how to connect cameras, sensors, activators, microphones, a speaker or headphones, and a CCTV monitor to the MVG 400 unit.

NOTE: Make sure that all installed devices are designed to function properly under mobile conditions (temperature range, vibrations, power supply, etc), that they are all installed in accordance with their manufacturer's requirements, and that the devices and all cables are properly installed and firmly fastened so that they will not become dislodged when the vehicle moves. It is highly recommended to consult vehicle experts before installing external devices.

Connecting Cameras

Up to four cameras can be connected to the MVG 400. If the cameras have PTZ controls for remote aiming and zooming, and the PTZ protocols they use are supported, the control cables can also be connected to the unit.

Any PAL or NTSC video camera with a composite video output can be connected to the unit. The video inputs of the MVG 400 unit may require either a BNC or a Mini-DIN connector, depending on the options selected when the unit was purchased. A cable with a composite video connector on one end, and a compatible male connector (BNC or Mini-DIN) on the other, should be used to connect each camera to the MVG 400.

NOTE: A cable with a male RCA connector can be connected to a female BNC connector by using an RCA-to-BNC adaptor.

Figure 4: RCA-to-BNC adaptor

Cameras that are connected to the MVG 400 can receive their power from the vehicle battery via the MVG 400 unit. Cameras that use Mini-DIN connectors receive their power via the same cable through which they transmit their video output to the unit (through the **Video-In** connectors on the rear panel of the unit). Other cameras require an independent power supply. These cameras can receive power via the **12 VDC** connector on the rear panel of the unit. However, bear in mind that the unit can supply a maximum of 500 mA of power. If the devices connected to the unit require more than this amount of power, you must power some or all of them independently. For additional information, please refer to the camera documentation.

⇨ *To connect a camera:*

1. Install the camera in its desired location.
2. Connect the output of the camera to one of the **Video-In** connectors on the rear panel of the unit.
3. If the camera requires an independent power supply, connect its power connector to a power source. If the MVG 400 can supply enough power for the cameras connected to it, you can connect the camera to the **12 VDC** connector on the rear panel of the unit. Otherwise, you must use an external power source.

Note: You can connect multiple cameras to the **12 VDC** connector as long as they do not overload the unit.

Connecting PTZ Controllers

If a camera has remote PTZ control features (pan, tilt, zoom, and/or focus), and uses a supported PTZ protocol, you can connect the control cable to the unit. Both RS232 and RS485 PTZ connection types are supported. Consult the camera documentation for information about which connection type to use.

NOTE: If you are connecting sensors to the unit using an ADAM module, you cannot connect any PS232 PTZ controllers to the unit. For additional information, see *Connecting Sensors Using an ADAM Module*, page 18.

If you want to connect the PTZ controllers of multiple cameras to the unit, only one of the controllers can use an RS232 connector – the others must all use RS485 connectors. PTZ controllers for more than one RS232 camera cannot be connected to the unit simultaneously.

If you connect multiple RS485 PTZ camera controllers, they should be daisy-chained to the RS232/485 connector, as described below. In this case, each camera in the chain must be given a different ID number. Please refer to your camera's documentation for information about configuring its ID number. In addition, note that you can only create an RS485 daisy chain if every link on the chain (i.e., every camera) uses the same PTZ protocol. Attempting to connect cameras that use different protocols will prevent all of the cameras from working properly.

⇨ *To connect an RS232 PTZ controller:*

The RS232 controller cable should end with a female 9-pin RS232 connector.

- If you are only connecting the RS232 PTZ controller to the unit, and are not connecting any RS485 PTZ controllers, plug the 9-pin RS232 connector directly into the RS232/485 connector on the rear panel of the unit.
- If you are also connecting one or more RS485 PTZ controllers to the unit, plug the 9-pin RS232 connector into the RS232/485 adapter supplied with the unit.

⇨ *To connect an RS485 PTZ controller:*

Each RS485 controller cable should end with two wires.

1. Use a wire connector to connect the wires to the RS485 connection wires of the adapter. Be sure to match the positive (+) wire of the controller cable to the positive (+ red) wire of the adapter, and the negative (-) wire of the controller cable to the negative (- grey) wire of the adapter (see figure 5).

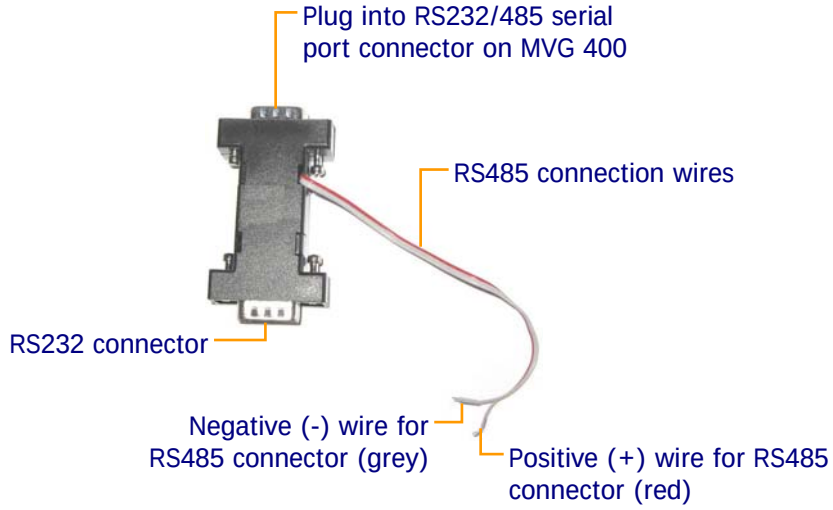

Plug into RS232/485 serial port connector on MVG 400
RS485 connection wires
RS232 connector
Negative (-) wire for RS485 connector (grey)
Positive (+) wire for RS485 connector (red)

Figure 5: RS232/485 adapter

To connect multiple RS485 controllers to the adapter, insert the positive (+) wires of all of the controllers into one slot in the wire connector, and the negative (-) wires of all of the controllers into the other slot of the wire connector.

Figure 6: Wire connector

2. If multiple PTZ cameras are connected to the unit, configure each camera to use a different ID. For information about how to do this, refer to the camera documentation.

3. Connect the RS232/485 adapter to the RS232/485 serial port connector on the rear panel of the unit.

Connecting Sensors

Sensors are devices that detect events such as a door being opened, brakes being pressed, or high G-force pressure. Up to four dry-contact input sensors can be connected directly to the unit. In addition, if you wish, you can connect an ADAM Data Acquisition Module to the unit. The ADAM module makes it possible to connect up to 16 additional sensors to the unit.

Sensor 1 and Sensor 4 can be used as switches instead of sensors. The switches can be used to activate outlines and to change the display on a CCTV monitor.

Connecting a Sensor Directly to the Unit

The unit has four Input connectors (**In1** – **In4**). You can use these connectors to connect up to four dry-contact input sensors directly to the unit. Alternatively, **In1** and **In4** can be used to connect switches as follows:

- **In1:** If you are defining more than one outline (alternate sets of recording and event-handling settings), you can connect a toggle (on-off) switch to **In1** instead of a sensor.

The switch can then be used to change the active outline. For additional information, see *Outlines*, page 124; *Sensor and Activator Settings*, page 115.

Note: Some alarm panels can also be connected to **In1**. When they are, they can function as automatic outline toggle switches. For additional information, please consult the alarm panel vendor.

- **In4:** If a CCTV monitor will be connected to the unit, you can connect a push-button switch to **In4** instead of a sensor. The button can then be used to change the display on the monitor. For additional information, see *Connecting a CCTV Monitor*, page 24; *Configuring a CCTV Monitor (TV-Out)*, page 54; *Sensor and Activator Settings*, page 115.

⇨ *To connect a sensor or switch directly to the unit:*

1. Install the sensor or switch in its desired location in accordance with the manufacturer's instructions.

   Note: If the sensor requires an external power supply, you may be able to connect it to the **12 VDC** connector on the rear panel of the unit. However, bear in mind that the unit can supply a maximum of 500 mA of power. If the devices connected to the unit require more than this amount of power, you must power some or all of them independently.

2. Connect the two wire contacts of the sensor or switch to the Sensors terminal block on the rear panel of the MVG 400, as illustrated in figure 7. Insert the wires into the connectors and tighten the screws below each connector to hold the wires in place.

   Note: The wires must be connected to two adjacent contacts in the same group (e.g. the two contacts of "**In1**"), but the polarity does not matter.

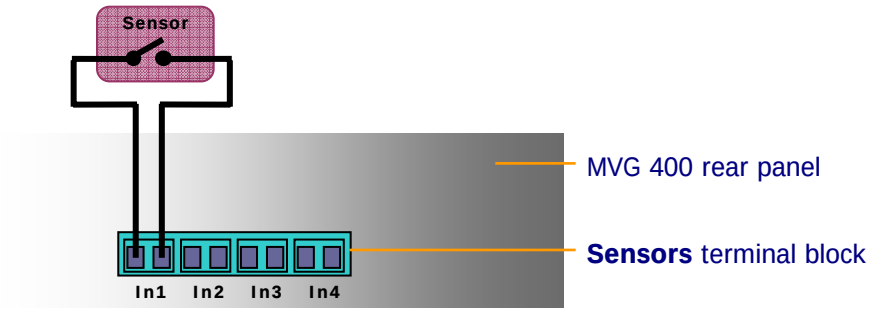


Figure 7: Connecting a sensor

Connecting Sensors Using an ADAM Module

If you want to connect more than four dry sensors to the MVG 400, you can do so by connecting an ADAM Data Acquisition Module to the unit. Up to 16 additional dry sensors can then be connected to the unit through the ADAM module.

To connect sensors using an ADAM module, you will need the following items:

- ADAM-4051 Data Acquisition Module (available from SerVision)
- ADAM-4520 isolated RS232->RS422/RS485 converter (available from SerVision)

- Flat ribbon cable with D-type 9-pin female connector on one end and a D-type 9-pin male connector on the other end
- Wire to connect the ADAM module to the ADAM converter – red, black, yellow, and green
- Wire and an electrical plug (optional) to connect the ADAM module to a power source (either a power supply from the unit or an independent connection)

Figure 8: ADAM-4051 module

Figure 9: ADAM-4520 isolated converter

NOTE: The instructions below explain how to connect sensors to the MVG 400 using the ADAM module and converter described above. For additional information about connecting and configuring the ADAM module and converter, please refer to the manufacturer's documentation, or contact your vendor.

⇨ *To connect sensors using an ADAM module:*

1. Install the sensors in their desired locations in accordance with the manufacturer's instructions.
2. Connect the wire contacts of each of the sensors to the terminal blocks of the ADAM-4051 module as follows:
   - Connect all of the negative (-) wires of all of the sensors to one of the ground (**D GND**) connectors on the ADAM module. If the wires cannot all be inserted into the connector, use a wire connector to connect them together, and then connect the wire connector to the ground (**D GND**) connector on the ADAM module.
   - Connect each of the positive (+) sensor wires to one of the numbered connectors (**D1 0** through **D1 15**) in the terminal blocks of the module.

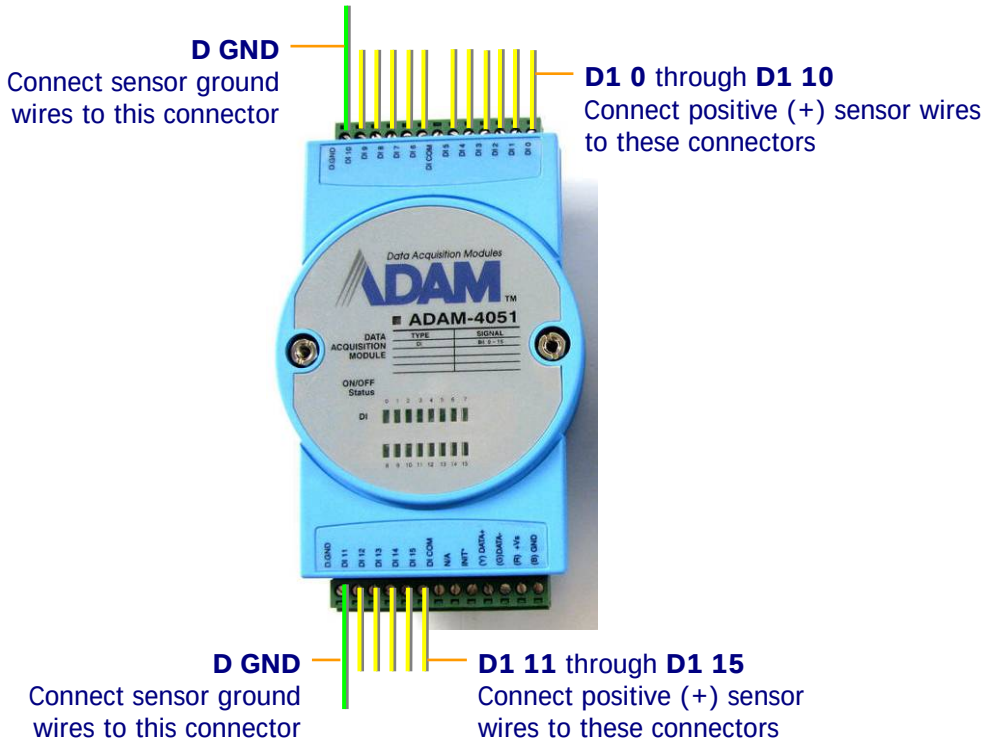

D GND
Connect sensor ground wires to this connector
D1 0 through D1 10
Connect positive (+) sensor wires to these connectors
Data Acquisition Modules
ADAM
ADAM-4051
D GND
Connect sensor ground wires to this connector
D1 11 through D1 15
Connect positive (+) sensor wires to these connectors

Figure 10: Connecting sensors to the ADAM-4051 module

3. Connect the ADAM-4051 module to the ADAM-4520 isolated converter as follows (see figure 12, page 22):

Connect this connector on the ADAM-4051	To this connector on the ADAM-4520
(Y) Data+	Data+
(G) Data-	Data-
(R) +Vs	(R)+Vs
(B) GND	(B)GND

4. Connect the ADAM-4520 isolated converter to the RS232/485 connector on the rear panel of the MVG 400 unit in one of the following ways:

   - If you are not connecting any RS485 PTZ controllers to the unit, using the 9-pin flat ribbon cable, connect the RS232 connector of the ADAM-4520 converter directly into the RS232/485 connector.
   - If you are also connecting one or more RS485 PTZ controllers to the unit, using the 9-pin flat ribbon cable, connect the RS232 connector of the ADAM-4520 converter into the RS232 connector of the RS232/485 adapter supplied with the unit. Connect the PTZ controllers to the adaptor as explained under *Connecting PTZ Controllers*, page 16. Then plug the adaptor into the RS232/485 serial port connector on the unit.

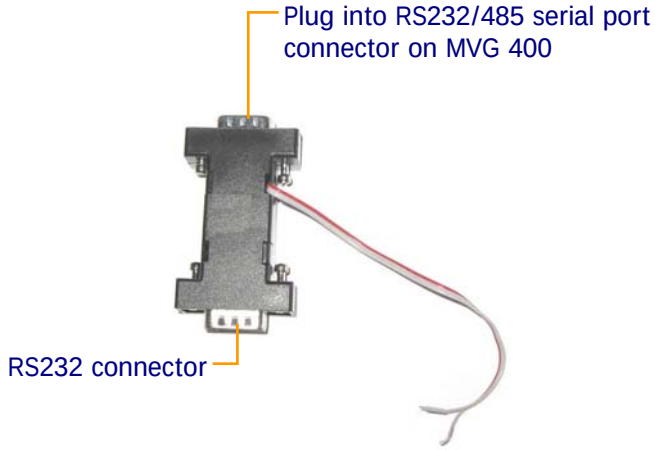


Figure 11: RS232/485 adapter

Note: If you connect an ADAM module to the unit, you cannot connect any RS232 PTZ controllers to the unit. For additional information about connecting PTZ controllers to the unit, see *Connecting PTZ Controllers*, page 16.

5. Connect the ADAM-4051 module to the power source as follows (see figure 12, page 22):

   - Connect the positive (+) wire of the power supply cable to the **(R) +Vs** connector on the module
   - Connect the negative (-) wire of the power supply cable to the **(B) GND** connector on the module

   Note: Each of the power connectors on the module will then have two wires connected to it – one connecting it to the power supply, and one connecting it to the power connectors of the ADAM-4520 converter.

   Note: You may be able to use the MVG 400 to supply power to the modules by connecting the power supply cables to the **12 VDC** connector on the rear panel of the unit. However, bear in mind that the unit can supply a maximum of 500 mA of power. If the devices connected to the unit require more than this amount of power, you must power some or all of them independently.

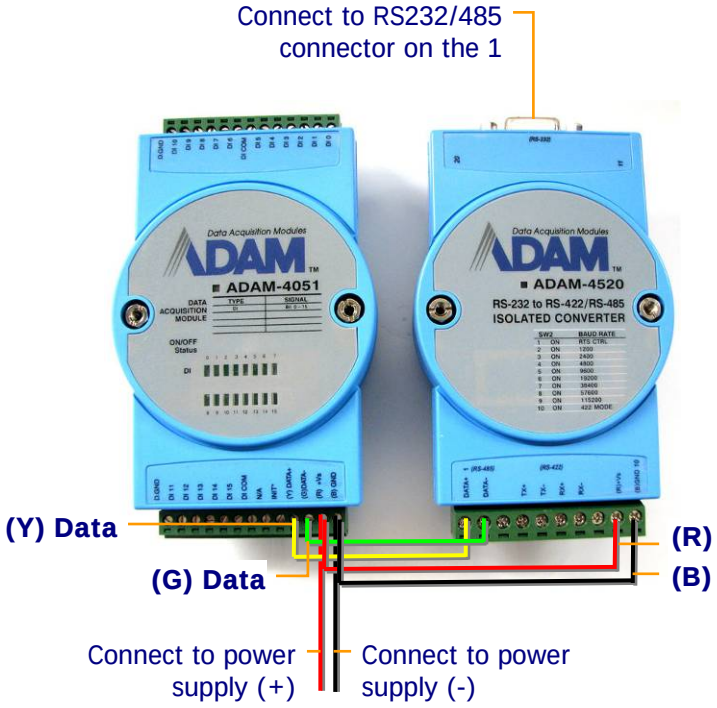


Figure 12: Connecting the module to the converter, the MVG 400, and the power supply

Connecting Activators

Activators are external devices such as alarms and lights that can be turned on by the system in response to an event. Essentially, the unit functions as an on/off switch for these devices. The unit activates an activator by closing the circuit of its power supply. Up to two activators can be connected to the unit.

In addition to the activators themselves, you will need the 16 AWG red and black cables to connect each activator to the unit.

⇨ *To connect an activator:*

1. Install the activator in its desired location in accordance with the manufacturer's instructions.

   Note: If the activator requires an external power supply, you may be able to connect it to the **12 VDC** connector on the rear panel of the unit. However, bear in mind that the unit can supply a maximum of 500 mA of power. If the devices connected to the unit require more than this amount of power, you must power some or all of them independently.

2. Connect the two contacts of the activator to the Activators terminal block on the rear panel of the MVG 400, as illustrated in figure 13.

   Note: The wires must be connected to two adjacent contacts in the same group (e.g. the two contacts of “Out1”), but the polarity does not matter.

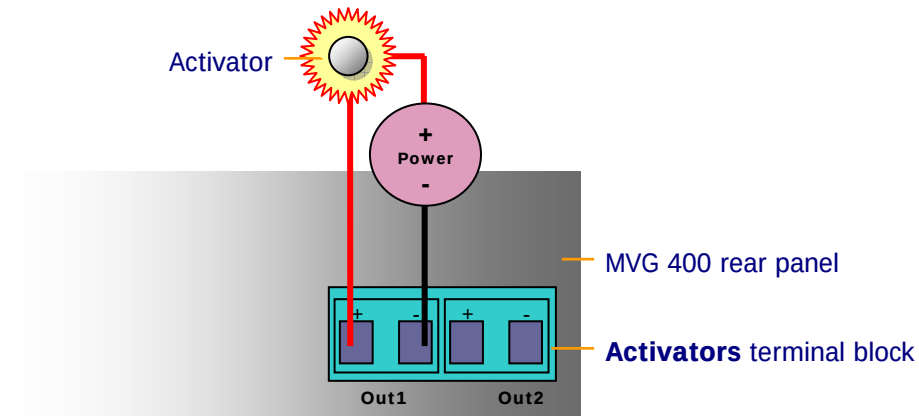


Figure 13: Connecting an activator that has its own power supply

Connecting Microphones

Up to two microphones can be connected to the unit, one active and one passive. When one or two microphones are connected, you can hear and record sound along with video images. The sound from a microphone can be associated with any or all of the cameras. (For information about linking the sound with a camera, see *Camera Settings*, page 96.)

Microphones can be connected to one or both of the **Audio In** connectors (**Ain1** and/or **Ain2**). Passive microphones, which require external amplification, must be connected to **Ain1**. Active (self-amplifying) microphones must be connected to **Ain2**. Microphones with an output voltage of 1 Vrms or 1.41 Peak are supported.

⇨ *To connect a microphone:*

1. Install the microphone in the desired location.
2. Plug the microphone connector into the desired **Audio In** connector (**Ain1** or **Ain2**).

About Speakers

The MVG 400 unit contains a built-in, 1-watt, internal speaker, which is located on the right side of the unit. You can also connect an external speaker or headphones to the unit. The speakers (and headphones) allow you to hear audio that is transmitted from one of the client applications. The external speaker or headphones can be used in addition to the internal speaker or instead of it. (For additional information, see *Configuring General System Settings*, page 48.)

Figure 14: Internal speaker

Connecting a Speaker or Headphones

You can connect an external speaker or headphones to the MVG 400.

⇨ *To connect a speaker or headphones:*

1. Install the speaker in its desired location, if necessary.
2. Plug the speaker or headphone connector into the **Audio Out** connector (**Aout**).

Connecting a CCTV Monitor

You can connect a CCTV monitor to the unit. The monitor offers an alternative way to view live video from the MVG 400. It is primarily useful if you want to view video when the user is near the unit. For example, if the MVG 400 is set up in a bus, the driver can use a CCTV monitor to keep tabs on parts of the bus that cannot been seen from the driver's seat.

The following types of monitors can be used:

- Surveillance monitors: Monitors that are designed to be plugged directly into surveillance cameras.
- Entertainment monitors: Monitors that are intended to be plugged into portable DVD players in vehicles.
- Standard television sets with AV connectors

To connect the monitor to the MVG 400, you will need a cable with the following connectors:

- An appropriate connector (BNC or RCA) for the Video-In connector of the monitor. (Consult the monitor documentation or your vendor to find out which kind of connector is required for the particular monitor you are using.)
- A BNC male connector to connect to the **TV-Out** connector of the MVG 400. (A cable with an RCA connector can be used by attaching a BNC-to-RCA adaptor to the connector. See figure 4, page 15.)

NOTE: For information about configuring and using the CCTV monitor, see *Configuring a CCTV Monitor (TV-Out)*, page 54; *Viewing Video on a CCTV Monitor (TV-Out)*, page 152.

⇨ *To connect a CCTV monitor:*

1. Install the monitor in its desired location.
2. Connect the Video In connector of the monitor to the **TV-Out** connector of the MVG 400, using a cable with an appropriate connector (BNC or RCA) for the Video-In connector of the monitor on one end, and a BNC male connector on the other end.

   Note: If you are using a standard television set as a monitor, use the television's AV connector as the Video Input connector.

Connecting a Switch

If you wish, you can connect a switch to the unit to change the display on the monitor. The switch must be connected to the Sensor 4 (**In4**) connector. For additional information, see *Connecting Sensors*, page 17; *Configuring a CCTV Monitor (TV-Out)*, page 54; *Viewing Video on a CCTV Monitor (TV-Out)*, page 152.

Connecting Multiple Monitors

If you wish, you can connect multiple CCTV monitors to the MVG 400. For example, you may wish to have one monitor beside the driver's seat and another beside the conductor's seat.

To connect multiple monitors, you must use video splitters to split the connection. Bear in mind, however, that the image quality in each of the monitors will be slightly degraded. To correct this problem, you can use a video amplifier (booster) for each monitor. To ensure you have the correct equipment, consult a video equipment supplier.

Setting Up Network Connections

The MVG 400 has a built-in router. This router manages a small local network (LAN) that can include up to four devices – the video gateway itself and up to three other devices. For example, you could connect a PC and an IP-based cash box to the router, and they would all be part of the MVG 400's LAN.

The built-in router is also used to connect the internal local network to other, external, networks, such as the internet or a cellular network. This makes it possible to access the MVG 400 and the other devices connected to the router remotely. In addition, if a PC is connected to the MVG 400's router, it can access the MVG 400 directly, even when no external network connection is available. The router can connect to more than one external network at a time.

Because the router is part of both the internal LAN and one or more external networks, it has two types of IP addresses:

- **Local IP:** An IP address on the internal LAN. This IP address identifies the router within the network that it manages. It is static (fixed) and is **`172.20.233.1`**.

- **External IP:** An IP on each external network to which it is connected (cabled LAN, WiFi, and/or cellular). These are the IP addresses of the MVG 400 unit itself. Optimally, these addresses should also be static. If they are not, various solutions are available to make it possible to connect the unit to the internet, and to connect to the unit remotely via the internet, as explained below.

Connecting the MVG 400 to an External Network

The following types of external network connections are supported:

- Ethernet cable
- Cellular
- WiFi

The MVG 400 has a distinct IP address on each of the external networks to which it is connected. For example, if it is connected to a LAN via Ethernet cable, to a wireless network via WiFi, and to a cellular network via cellular modem, it will have three external IPs – one on each network.

Each of the external IP addresses of the unit can be *static* – fixed within the network – or *dynamic* – assigned by the network on the fly. Dynamic IP addresses can change at any moment. This makes it difficult to connect to the unit remotely, because the address to use to access it is not known. Therefore, it is best to try to ensure that the unit has static external IP addresses whenever possible. The system administrator of each network is responsible for deciding whether static or dynamic IP addresses are assigned to devices in the network. Each network has its own policies in this regard.

The *public* IP address of the MVG 400 is the address through which it is actually connected to the internet. This address is assigned to the unit by the ISP or cellular provider, and it may be either static or dynamic. If the service provider assigns a static IP address to the unit, client applications can easily be configured to connect to it. On the other hand, if the unit is assigned a dynamic IP address, the address may be different each time the unit connects to the internet, and clients cannot easily connect to it. In this case, you can use a *dynamic DNS* (DDNS) service to facilitate internet connections to the unit. For additional information, see *Proxy and DDNS Settings*, page 76.

NOTE: To ascertain whether your MVG 400 has a static or dynamic IP address, contact your ISP or cellular provider.

NOTE: Some devices connect to the internet even though they do not have public IP addresses (IP addresses that are recognized on the internet) assigned to them. In this case, they connect to a LAN that is managed by the service provider, and that LAN connects to the internet by means of a public IP. To ascertain whether your unit has a public IP address, contact your service provider. You may have to specifically request a public IP address from your provider. If your unit cannot be allocated a public IP address, remote access to your MVG 400 via the internet can only be established by means of a SerVision proxy server. For additional information, see *Proxy and DDNS Settings*, page 76, or contact your vendor.

This section explains how to connect the necessary cables and devices to the unit so that it can connect to external networks. Once these connections are in place, you must configure them as explained in the *Configuring the MVG 400* chapter (beginning on page 36). In particular, please refer to *LAN Settings*, page 63; *Modem*, page 65; *WiFi*, page 68. The unit will only be able to connect to the networks after the network settings are configured.

⇨ *To connect the MVG 400 unit to an external network using an Ethernet cable:*

- Connect the **Ethernet (Out)** connector on the rear panel of the MVG 400 unit to a LAN connection point (a hub, wall socket, or any other connection point) using the supplied Ethernet (network) cable.

⇨ *To connect the MVG 400 unit to an external cellular network:*

- Connect a supported cellular modem with a USB adaptor to one of the USB ports on the rear of the unit.

  Note: In most cases, remote client devices cannot connect directly to the MVG 400's local network over a cellular network. If you want to use a cellular network to connect to the MVG 400, you will probably have to use a SerVision proxy server. For additional information, see *Proxy and DDNS Settings*, page 76 or contact your vendor.

⇨ *To connect the MVG 400 unit to an external WiFi network:*

- Connect a supported WiFi card with a USB adaptor to one of the USB ports on the rear of the unit.

  Note: If the unit is already running, restart it after you connect the WiFi card.

Connecting Devices to the MVG 400's Internal Network

Up to three IP-based devices can be connected to the MVG 400's local network. The MVG 400's router contains a DHCP server that can automatically assign IP addresses to devices that are plugged into its Ethernet ports. If you will not need to access a connected device remotely, you can configure the device to acquire its IP from this DHCP server. In this case, the device will be able to connect to the external network, but remote devices will not be able to access it. If you want to access the device remotely, you should manually configure its IP address and other network settings, as described below, and set up port forwarding for the device as described under *Port Forwarding*, page 74.

NOTE: The video gateway component of the MVG 400 automatically connects to the router component when the unit starts up. The router's DHCP server assigns an IP address to the video gateway component and port forwarding is automatically configured.

⇨ *To connect a device to the MVG 400's local network:*

- Connect the network connector of the device to one of the **Ethernet (In)** connectors on the rear panel of the MVG 400.

If you are configuring the device to enable remote access to it, set its network settings as follows. (For information about how to configure the network settings of the device, consult the device's documentation.)

Setting	Value
IP Address	Assign a static IP address to the device. The IP must be in the range **172.20.233.2** through **172.20.233.99**.
Mask	**255.255.255.0**
Gateway	**172.20.233.1**
DNS	**172.20.233.1**

Connecting the GPS Antenna

A GPS receiver is built into the unit. When the GPS antenna is connected to the unit, this receiver can be used to track the location of the vehicle in which the MVG 400 is installed.

➪ *To connect the GPS antenna:*

1. Connect the supplied GPS antenna cable to the GPS connector on the rear of the unit.
2. Place the other end of the antenna as high up as possible in the vehicle, such that there are no obstructions between it and the sky. The end of the antenna contains a magnet with which you may be able to attach it to the roof of the vehicle. Alternatively, you can attach it to its intended location with double-sided tape. In any case, make sure the antenna is attached securely to the vehicle so that it will not come loose when the vehicle moves.

Connecting the MVG 400 to a Power Source

The power connector of the MVG 400 can be connected either to the vehicle battery or to a standard electrical outlet. Once it is connected, it starts up automatically. During the start-up process, the LEDs on the front of the unit flash at various intervals. When the start-up process is completed successfully, the **Power** LED should display as a solid color and blink momentarily every second. (Depending on the configuration settings, it should either be solid orange and then blink green or solid green and then blink orange.)

Figure 15: Power LED

NOTE: When the start-up process is completed, if the **Power** LED does not flash – it displays as a solid green or orange all the time – the start-up process was not successful. In this case, disconnect the unit from the power supply and then reconnect it.

NOTE: It is recommended that only vehicle installation specialist connect the unit to the battery.

Connecting the Unit to the Vehicle Battery

Normally, the unit is connected to the vehicle battery and to the ignition using 16 AWG cable (not supplied). This can be done in one of two ways:

- Connecting the unit directly to the battery and the ignition
- Connecting the unit to a power source in the vehicle that is only active when the ignition is on

When the unit is connected to the battery and ignition in one of these ways, it automatically powers up when the ignition is switched on. If the unit is connected directly to the battery, it can be configured to operate only when the vehicle ignition is on or to shut down automatically soon after the ignition is turned off. Otherwise, it will shut down automatically when the ignition is turned off.

For testing and evaluation purposes, the unit can also be powered by connecting it to the vehicle's cigarette lighter, if the vehicle has one. This method connects the unit to the battery and the ignition quickly and easily, but it is not normally suitable for permanent connections, because it is difficult to install the unit and the wiring securely in appropriate locations when this method is used.

In addition, it is possible to connect the unit to the battery alone, without connecting it to the ignition. In this case, the unit runs continuously, whether the ignition is on or not, as long as the battery can supply power to it. Because of the drain on the battery, connecting the unit in

this way is also only recommended for limited periods of time for testing and evaluation purposes.

NOTE: The ignition connector (**IGN**) of the **Power** connector MUST be connected. If it is not, the unit will not start. If you wish to use the vehicle's ignition connection, connect it to this connector. Otherwise, short this connection to the power (+) connector. For additional information, see step 5 below (pp. 31–31).

NOTE: To connect the unit only to the battery, 16 AWG red and black cable (not supplied) is required.

⇨ *To connect the MVG 400 to the vehicle battery:*

1. Remove the wire connector from the end of the supplied power cord.

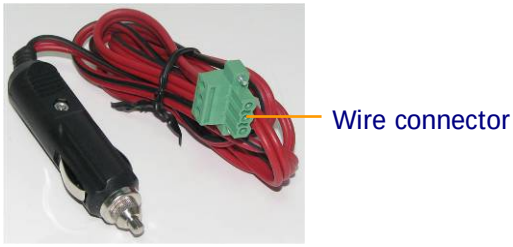


Figure 16: Wire connector

2. Plug the wire connector into the **Power** connector on the rear panel of the unit and tighten the screws to secure it.

Figure 17: Wire connector plugged into Power connector

3. Using 16 AWG red cable, connect the unit to the vehicle battery as follows:
   - Connect one end of the red wire to the positive (+) connector of the Power wire connector (the middle connector in the block).
   - Connect the other end of the red wire to the positive (+) connector of the vehicle battery or power source
4. Using 16 AWG black cable, connect the unit to the vehicle battery as follows:

- Connect one end of the black wire to the negative (-) connector of the Power wire connector (the right connector in the block).
- Connect the other end of the black wire to the negative (-) connector of the vehicle battery or power source

5. If you need to connect the unit to the ignition, using 16 AWG black cable, connect the **IGN** connector to the ignition, as illustrated in figure 18. If you do not need to connect the unit to the ignition, using 16 AWG black cable, connect the **IGN** connector to the positive (+) connector of the **Power** connector block (the middle connector in the block), as illustrated in figure 19.

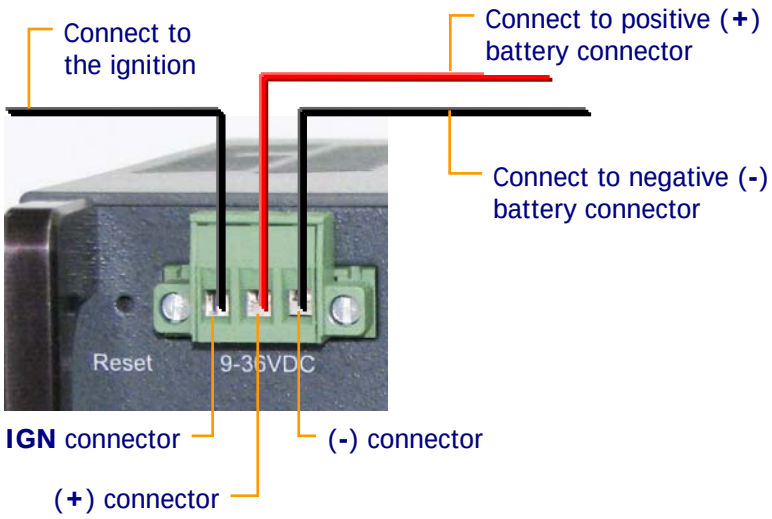


Figure 18: Connecting the MVG 400 to the vehicle battery and the ignition

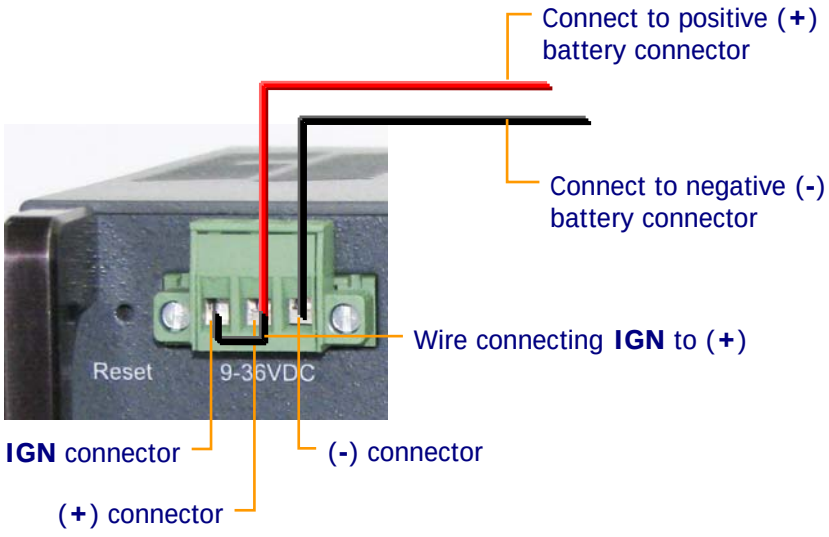


Figure 19: Connecting the IGN connector to the (+) connector when a connection to the ignition is not required

⇨ *To connect the MVG 400 to the vehicle's cigarette lighter:*

- Use the supplied power cord to connect the **Power** connector on the rear panel of the unit to the vehicle's cigarette lighter.

Figure 20: Power cord

Connecting the Unit to an Electrical Outlet

If a standard electrical outlet is available, the unit can be connected to it. For example, if you want to configure or test the unit indoors, you can power the unit in this way. The power-supply cable has a built-in switch. The switch mimics the ignition switch of a vehicle: when the switch is in the ON position, the "ignition" is on, and when it is in the OFF position, the "ignition" is off.

WARNING: Only the power supply cable that came with the unit should be used to connect the unit to an electrical outlet. Use of a power supply other then the one provided in the package may cause irreparable damage to the unit.

⇨ *To connect the MVG 400 to a standard electrical outlet:*

1. Use the supplied power supply cable to connect the **Power** connector to the outlet.

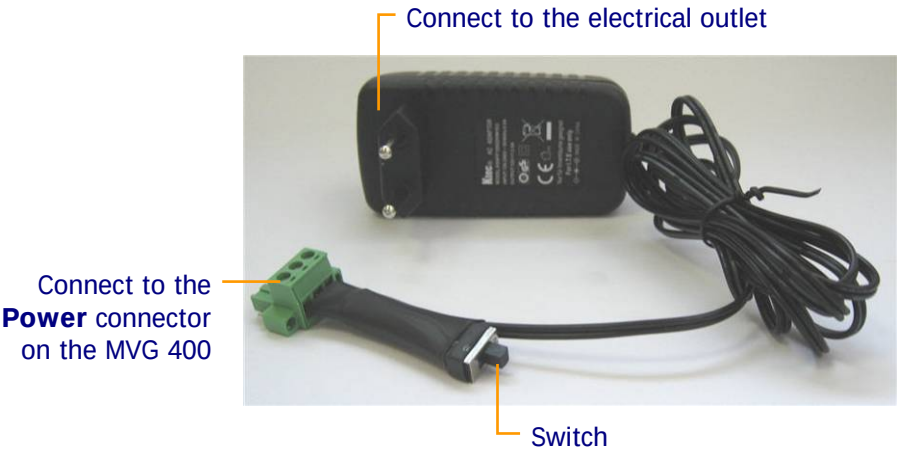


Figure 21: Power supply cable

2. Push the switch on the cable to the ON position. The "ignition" is on.

Installing the MultiClient

The **MultiClient** application is a PC-based client application that works in conjunction with the MVG 400. It enables you to access your system through the LAN or remotely, so that you can monitor events in real-time, view and download recorded video streams, and control the cameras and other devices connected to the system.

Before you can use the **MultiClient** for these purposes, you must configure the MVG 400 so that it can interact with the devices connected to it and can be accessed remotely by a client. Configuration is performed using a browser-based configuration utility, as described below (see *Configuring the MVG 400*, page 36).

The simplest way to open the configuration utility is through a **MultiClient** running on a PC that is on the same LAN as the MVG 400 (see *Before You Begin*, page 36). Thus, before you begin configuring the MVG 400, you should install the **MultiClient** on the computer that you will use for the configuration tasks.

After the unit is configured, you can check the installation and configuration using the **MultiClient** you installed on the PC (see *Connecting to the MVG 400*, page 146). If this is successful, you can then install the **MultiClient** on a remote computer and connect to the MVG 400 via the internet.

NOTE: This chapter explains how to get started using the **MultiClient**, with the **MultiClient** running on a PC that is on the same LAN as the MVG 400, so that you can configure the system and make sure it is working properly. For complete information about connecting to the MultiClient, locally or remotely, and using the MultiClient to view video, monitor events, and control devices, see the *MultiClient User Guide*.

⇨ *To install the MultiClient application on the PC:*

1. Download the latest version of the **MultiClient** installation program from the SerVision website (http://www.servision.net). The installation file is called **`Setup-MultiClient-SV-x.x.x.x.exe`** (The software version number appears in place of "`x.x.x.x`".)

2. Double-click the installation file. The setup program starts.

   Note: If a Microsoft Windows **Security Warning** dialog box is displayed, click **Run**.

3. Follow the on-screen instructions. The installation program consists of two installation wizards, one for the MultiClient itself and the other for the GPS map system (MapWinGIS). When the MultiClient installation program finishes, the MapWinGIS installation program opens automatically.

   Note: If your system does not include mobile gateways with GPS capabilities, you do not have to install the GPS map system package.

When the installation is completed, a MultiClient application icon is placed on your desktop.

Figure 22: MultiClient desktop icon

Opening the MultiClient

When you first open the **MultiClient**, you can choose whether to enable security. When security is enabled, access to the **MultiClient** is limited to authorized users; otherwise, it is available to anyone using the PC. At this stage, it is not necessary to enable security.

NOTE: For information about MultiClient security settings, see the *MultiClient User Guide*.

⇨ *To open the MultiClient:*

1. Start the program by double-clicking the desktop icon or by selecting it in the **Start** menu (**`Start>Programs>SerVision>SVMultiClient>SVMultiClient`**).

   You are prompted to decide whether to enable security or not:

   Figure 23: Enable security prompt

2. Select **No**. The **MultiClient** window opens.

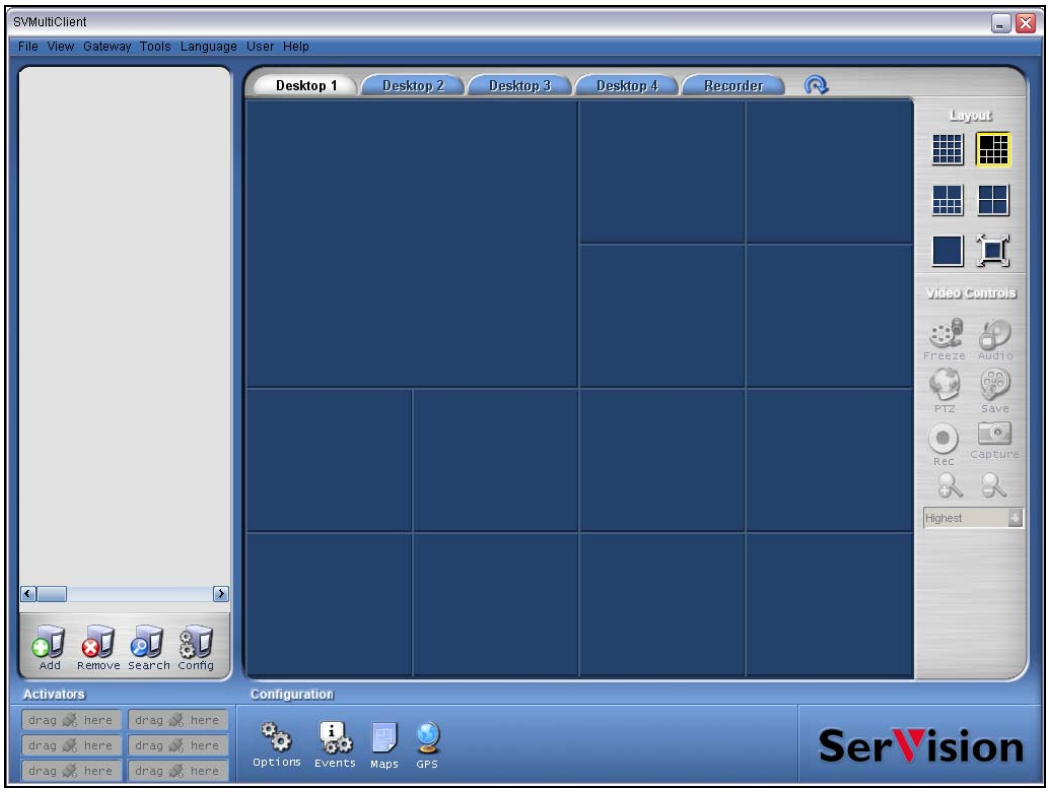


Figure 24: MultiClient window

Configuring the MVG 400

This section explains how to configure the MVG 400 unit for your environment and how to fine-tune its performance.

Before You Begin

Before the MVG 400 unit can be configured, the hardware should be set up as follows:

- The MVG 400 unit must be installed.
- All the cameras, sensors, activators, and optional devices should be connected to the MVG 400 unit.
- A PC must be on the same LAN as the MVG 400.

There are two ways that you can connect a PC to the same LAN as the MVG 400:

- Using the supplied Ethernet (network) cable, connect the network connector of the PC to one of the **Ethernet (In)** connectors on the rear panel of the MVG 400. The PC will then be included in the network managed by the MVG 400's router, as described under *Connecting Devices to the MVG 400's Internal Network*, page 27. (It is preferable to use this method the first time you connect to the unit, before it has been configured.)
- Using the supplied Ethernet (network) cable, connect the **Ethernet (Out)** connector on the rear panel of the MVG 400 to a LAN connection point, as described under *Connecting the MVG 400 to an External Network*, page 26. Connect the PC to the same LAN through a different connection point.

NOTE: Do not connect a LAN connection point to one of the **Ethernet (In)** connectors; if you do, the system will not function properly and will reset itself continuously.

The configuration process is normally initiated through the **MultiClient** application because this application assists in locating the unit on the network. Therefore, the **MultiClient** should be installed on the PC before you begin the configuration process.

NOTE: If the **MultiClient** is not installed on the PC, install it as described under *Installing the MultiClient*, page 33.

About the Configuration Utility

The configuration utility is browser-based. When you open it for the first time, the MVG 400 unit and the computer that is used for configuration must be on the same network. No internet connection is required to configure the MVG 400.

NOTE: The configuration utility is compatible with **Internet Explorer** and **Firefox**.

Once the network settings of the unit have been configured, such that the unit can be accessed remotely via the internet, the configuration utility can also be accessed remotely. For additional information, see *Opening the Configuration Remotely*, page 44.

In general, the easiest way to open the configuration utility is through the MultiClient, as described below. Nevertheless, in many cases, the configuration utility can also be opened manually in a browser, without using the MultiClient. It is not advisable to use this method the first time you open the utility, before the network settings are configured. For additional information, see *Opening the Configuration Manually*, page 45.

This chapter explains how to work with the configuration utility – how to open it, access its main menu, and navigate to the various configuration screens. The menu options and their settings are described in detail in the following chapters.

Opening the Configuration Utility

When you first open the configuration utility of the MVG 400 unit, you should open it through the MultiClient, as explained in this section. The PC on which the MultiClient is running must either be on the same network or be connected to one another by a network cable. This method of opening the configuration utility is recommended whenever the PC on which the MultiClient is running is on the same network as the MVG 400.

⇨ *To open the configuration utility:*

1. Open the MultiClient.
2. In the MultiClient, at the bottom of the **Connection Panel**, click the **Search** button.

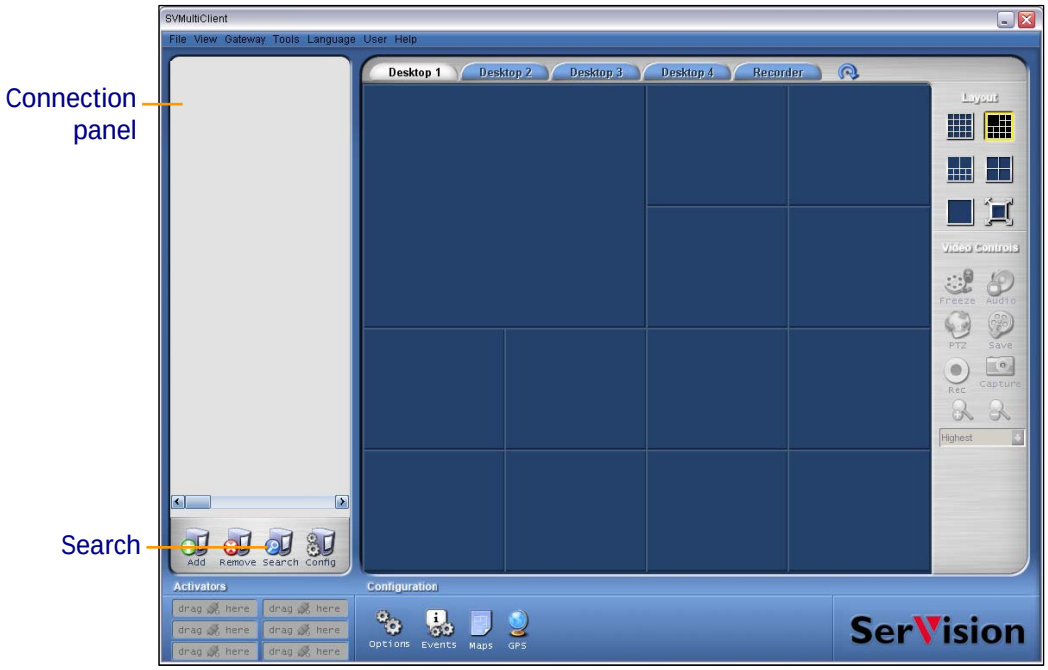


Figure 25: Search button

The **Find Gateway** dialog box opens, and displays a list of all the SerVision systems connected to the network.

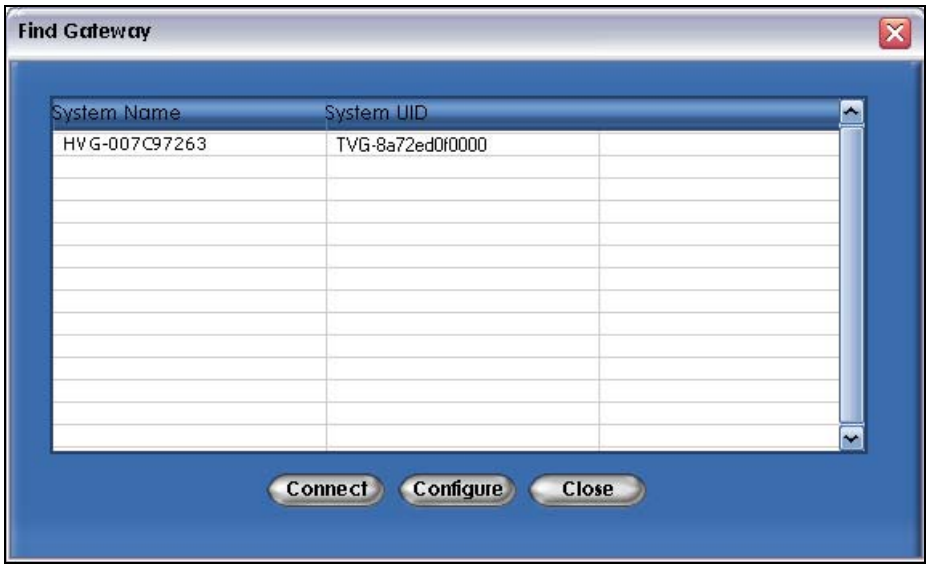


Figure 26: Find Gateway dialog box

Note: It may take a few minutes before the unit appears in the list.

3. Select the MVG 400 and then click **Configure**. A browser window opens and displays the configuration **Login** screen.

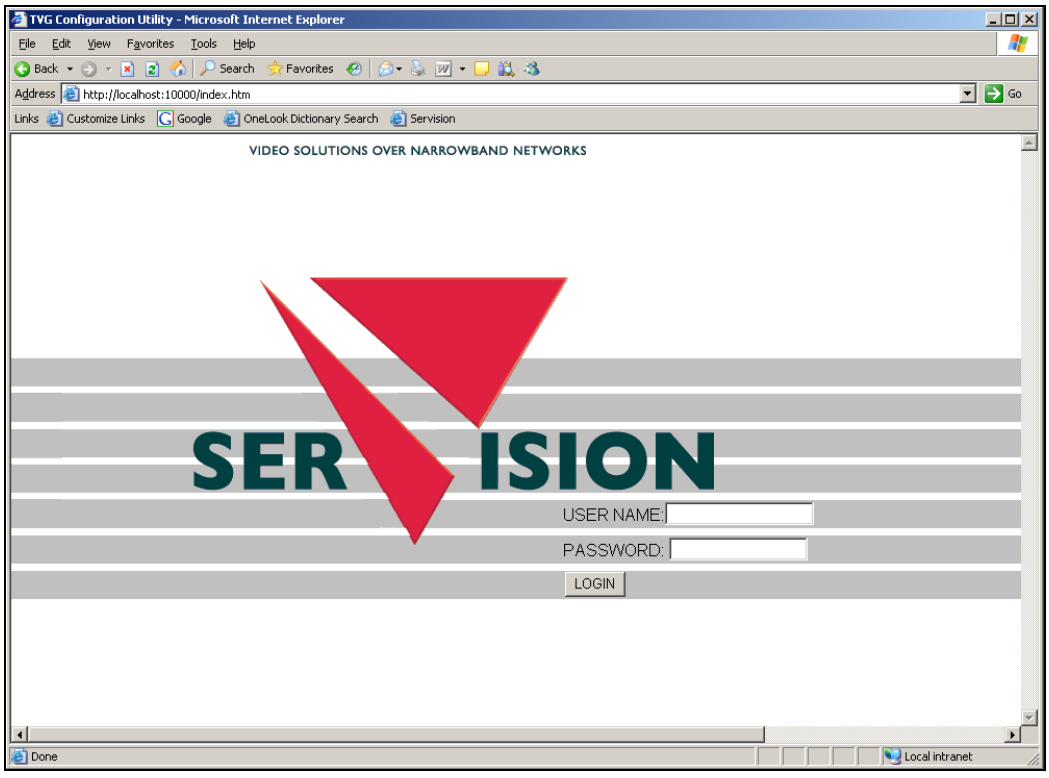


Figure 27: Login screen

4. Fill in the **User Name** and **Password** fields.

Note: By default, the user name is **svuser** and the password is **servconf**. Use these values the first time you log into the configuration utility. Once you have logged in, it is recommended that you change these values (see *Authentication*, page 80).

The **System Summary** screen opens:

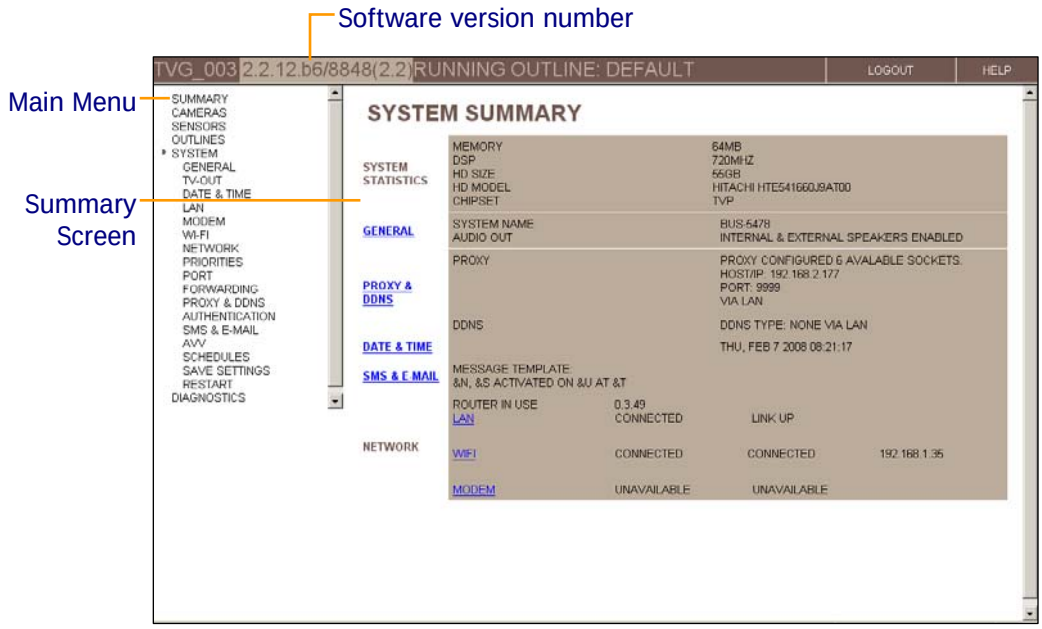


Figure 28: System Summary screen

Overview of the Interface

The configuration utility consists of screens that are displayed on the right side of the window and a **Main Menu** in a sidebar on the left side of the window.

Three types of screens can be accessed from the **Main Menu**:

- **Summary screens:** Screens that contain a summary of the current settings in a given category, and include links from which you can access the configuration screens in that category
- **Configuration screens:** Screens in which you can view and modify the configuration settings
- **Functional screens:** Screens that are used for saving and implementing the configuration settings on the unit, and for system diagnostics

The top-level summary screen – the **Summary** screen – contains an overview of the system and its settings, and has links to the main screens in which these settings can be modified.

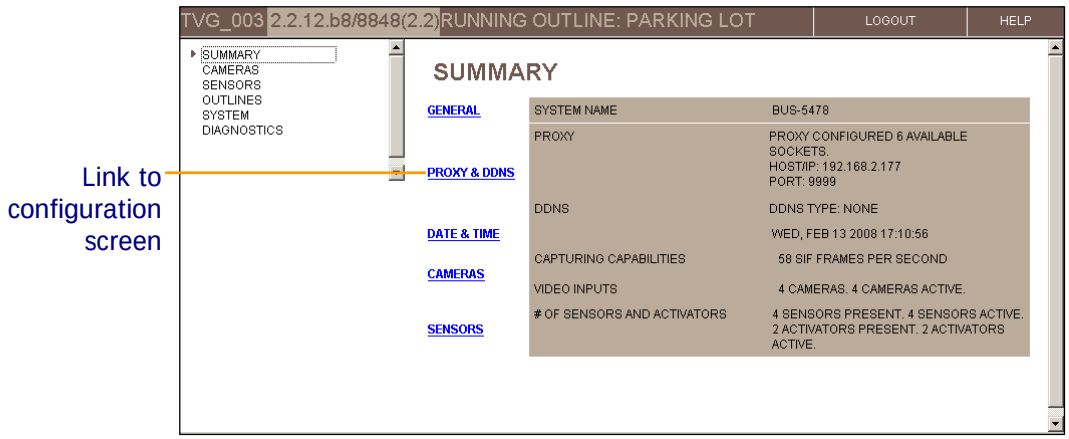


Figure 29: Top-level Summary screen

Five additional, lower-level summary screens are available in the configuration utility: **Cameras**, **Sensors**, **Outline**, **System**, and **Diagnostics**. These summary screens provide access to the following categories of options:

- **Cameras:** Camera video, PTZ (remote camera control), VMD (Video Motion Detection), and recording settings
- **Sensors:** Configuration of sensors and activators
- **Outline:** Configuration of sets of different camera and sensor settings that can be activated manually, in response to sensor events, or according to a fixed schedule.
- **System:** General system settings – including network settings, unit date and time, authentication, configuration of SMS and e-mail notifications, and TV-Out settings; saving configuration changes on the unit and restarting the unit
- **Diagnostics:** Tools for monitoring and testing the system

➪ *To open a summary screen:*

- In the **Main Menu**, click the name of the summary screen. The summary screen is displayed on the right side of the window, and the **Main Menu** expands to provide links to the relevant configuration and functional screens:

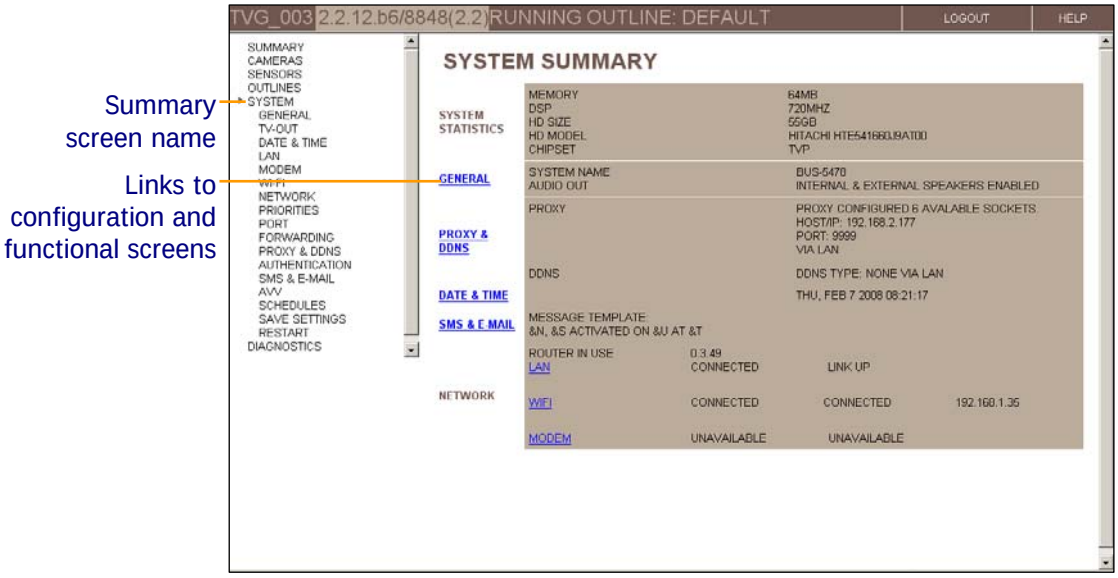


Figure 30: System Summary screen

➪ *To open a configuration or functional screen:*

- In the **Main Menu**, select the relevant summary screen, and then select the desired screen.

In addition, there are two buttons in the upper-right corner of the screen:

- **Logout:** Logs you out of the configuration utility and displays the **Login** screen again
- **Help:** Opens a browser window and navigates to the SerVision website, in which you can find information about configuring and working with your MVG 400 system, including the most up-to-date version of this manual (under `Support->Documentation->Manuals and Product Overviews`)

These buttons are available whenever the configuration utility is open, regardless of which screen is displayed.

Using the Configuration Utility

Typically, the configuration process proceeds as follows:

➪ *To configure the MVG 400 unit:*

1. In the **Main Menu**, click one of the links or tabs to open the desired summary screen, e.g., **Cameras** or **Sensors**. The configuration summary screen opens.
2. Click a link in the **Main Menu** or in the summary screen to open the desired configuration screen. The configuration screen opens.
3. Modify the settings in the configuration screen as necessary, and then click **Update** to store them on the unit. The changes are saved in a temporary cache on the unit, and an *Update Confirmation* message appears at the lower left of the screen, below the **Main Menu**.

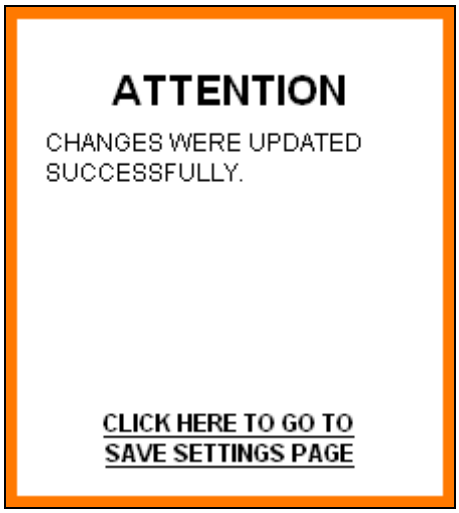


Figure 31: Update confirmation message

Note: If the update confirmation message does not appear, or an error message appears, all changes made since the last successful update of the page are discarded.

4. To modify additional settings, navigate to the relevant screen and make the changes as necessary. Click **Update** in each screen when you are finished modifying its settings. (You can continue modifying the settings in the same screen, if necessary; just be sure to click **Update** before you navigate to a different screen to ensure the settings are saved as they are displayed.)

5. When you have updated all the settings as necessary, do one of the following:

   - In the *Update Confirmation* (ATTENTION) message below the **Main Menu**, click "Click here to go to Save Settings page."
   - In the **Main Menu**, under **System**, click **Save Settings**.

   The **Save Settings** screen opens:

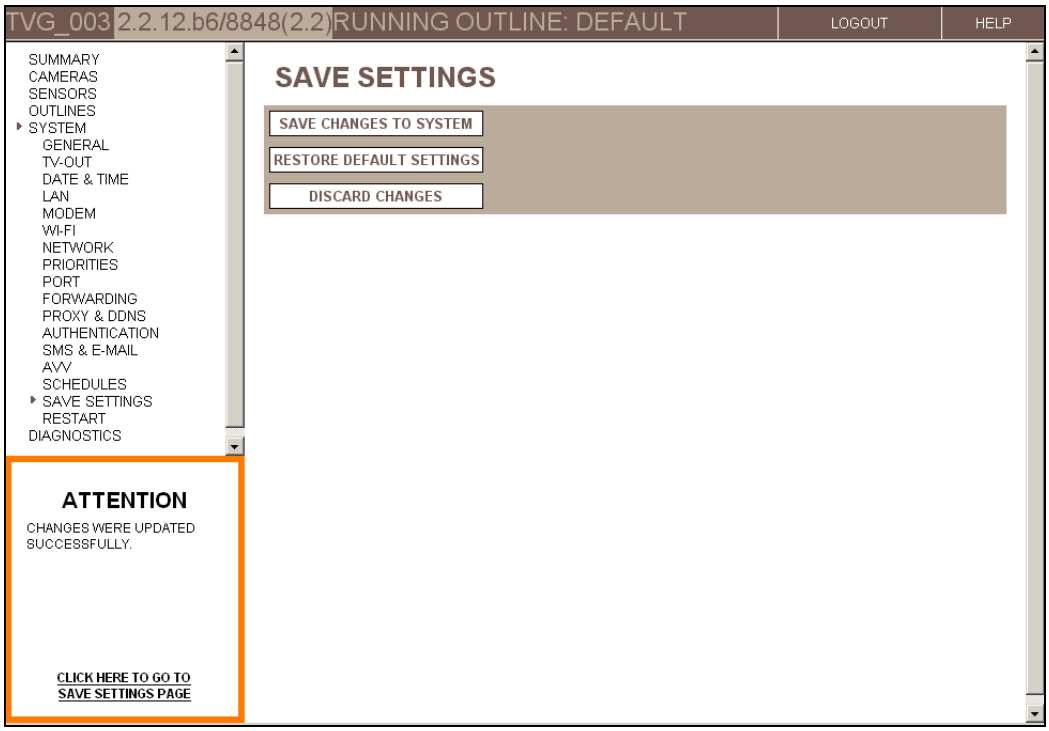


Figure 32: Save Settings screen

6. In the **Save Settings** screen, click **Save Changes to System**. The unit stores the changes permanently, and the **System Restart Page** screen opens:

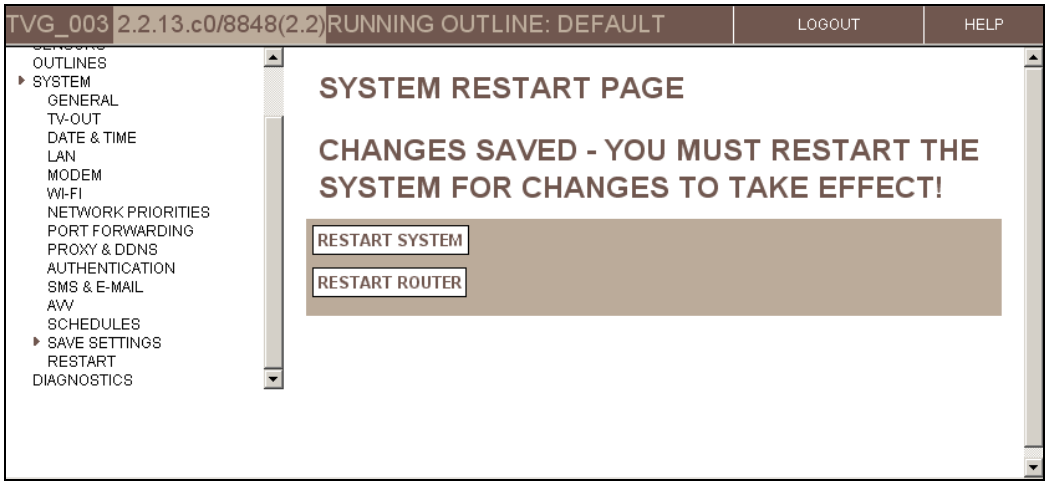


Figure 33: System Restart Page screen

7. Click **Restart System**. The unit restarts, and the changes are implemented. You are automatically logged out of the configuration utility.

   Note: Changes to the settings in the configuration screens only take effect on the MVG 400 unit after they are saved and the unit is restarted, as describe in steps 5–7. For additional information, see *Saving Configuration* Changes, page 139.

   Note: For security reasons, a configuration session times out after 15 minutes. If the configuration utility is open with no user activity (pages loaded) for more than 15 minutes, you must perform the login procedure again to continue configuring the

MVG 400 unit. Configuration changes that were made during the timed-out session are not discarded, as long as **Update** was clicked in the relevant screen before the time-out occurred.

Opening the Configuration Remotely

Once the unit has been configured so that it can be accessed by a client remotely via the internet (see *LAN Settings*, page 63), the configuration utility can be accessed remotely in the same way. To do this, all you need is a PC that is connected to the internet. You can then access the configuration utility in one of the following ways:

- **Through the MultiClient:** Connect to the MVG 400 and use the MultiClient to access the configuration utility, as explained below. (For additional information about working with the MultiClient, please refer to the *MultiClient User Guide*.)
- **Manually through a browser:** Enter the address and port in the **Address** field of a browser window, as described on page 45 (under *Opening the Configuration Manually*).

NOTE: You cannot access the configuration utility remotely through a proxy connection. Since most cellular connections rely on proxies, you cannot normally open the configuration utility remotely if the only way you can connect to the unit remotely is via a cellular modem.

⇨ *To access the configuration utility remotely through the MultiClient:*

1. Connect to the MVG 400 through the MultiClient.

   Note: The MultiClient's **Search** function does not work over the internet. Therefore, you will have to manually add and configure the connection to the MVG 400. For information about how to do this, please refer to the *MultiClient User Guide*.

2. In the **Connection Panel** (left panel) of the MultiClient, select the MVG 400.

3. At the bottom of the **Connection Panel**, click the **Config** button. A new browser window opens, and automatically connects to the configuration utility login page for the MVG 400.

NOTE: If you cannot connect remotely through port 10000, the login page will not appear at this point, and the browser will display an error message instead. Change the port number in the **Address** field of the browser from 10000 to the port that is set in the router's port forwarding settings (see *General System Settings*, page 47), and press **Enter** to reload the page. The login page should then appear. For additional information, see *Opening the Configuration Manually*, on page 45.

If more than one SerVision video gateway is connected to the internet via the same router, each of them must use a different port. When you click **Config** in the MultiClient, the browser automatically connects to port 10000. As a result, the MultiClient may initially connect you to the wrong video gateway unit. In this case, you should manually correct the port number in the **Address** field of the browser, as explained above.

Opening the Configuration Manually

The configuration utility can be opened manually in a browser using the IP address and port of the unit. This is particularly useful in situations in which you cannot open the configuration utility through the MultiClient. This is most likely to occur when you are opening the configuration utility remotely and either do not have access to the MultiClient or cannot connect to the unit remotely through port 10000.

In addition, you may simply find it convenient to open the configuration utility manually in a browser, even when you are able to open it through the MultiClient.

To open the configuration utility manually, you must know the network address (IP or hostname) of the MVG 400 and the port allowing access to the configuration utility. The required network address depends on whether you are accessing the configuration utility through a local connection (through the same LAN) or a remote connection (through the internet):

- **Local connection:** The network address is the private IP address of the MVG 400 on the local network. This can be either its dynamic IP, or, if it has one, its static IP. The port is 10000.
- **Remote connection:** The network address is the public IP or hostname of the router through which the MVG 400 connects to the internet. The port is the port that allows access to the configuration utility via port forwarding.

NOTE: You cannot access the configuration utility remotely through a proxy connection. Since most cellular connections rely on proxies, you cannot normally open the configuration utility remotely if the only way you can connect to the unit remotely is via a cellular modem.

⇨ *To open the configuration utility manually:*

1. Open a web browser.
2. In the **Address** field of the browser, enter the IP address and system port number of the MVG 400, in the following format:

   `http://IP:port`

   For example, if the MVG 400's IP address is 192.168.1.210 and you are connecting on port 10000, enter `http://192.168.1.210:10000`, as in figure 34:

   Figure 34: Address for configuring a unit with a static IP

3. Press **Enter**. The configuration utility **Login** screen opens.
4. Log into the configuration utility as usual (see page 38).

System Settings

System settings include basic settings, such as the name of the unit, the time zone in which it is located, and the current date and time, as well as network settings, usernames and passwords for accessing and configuring the unit, GPS settings, SMS and e-mail notification settings, schedules, and AVV and TV-Out configuration.

The **System Summary** screen summarizes the current system settings and provides links to the system configuration screens, in which the system settings can be modified. It also includes information about the MVG 400 unit and the network, as well as buttons that you can use to test the current e-mail and SMS notification settings.

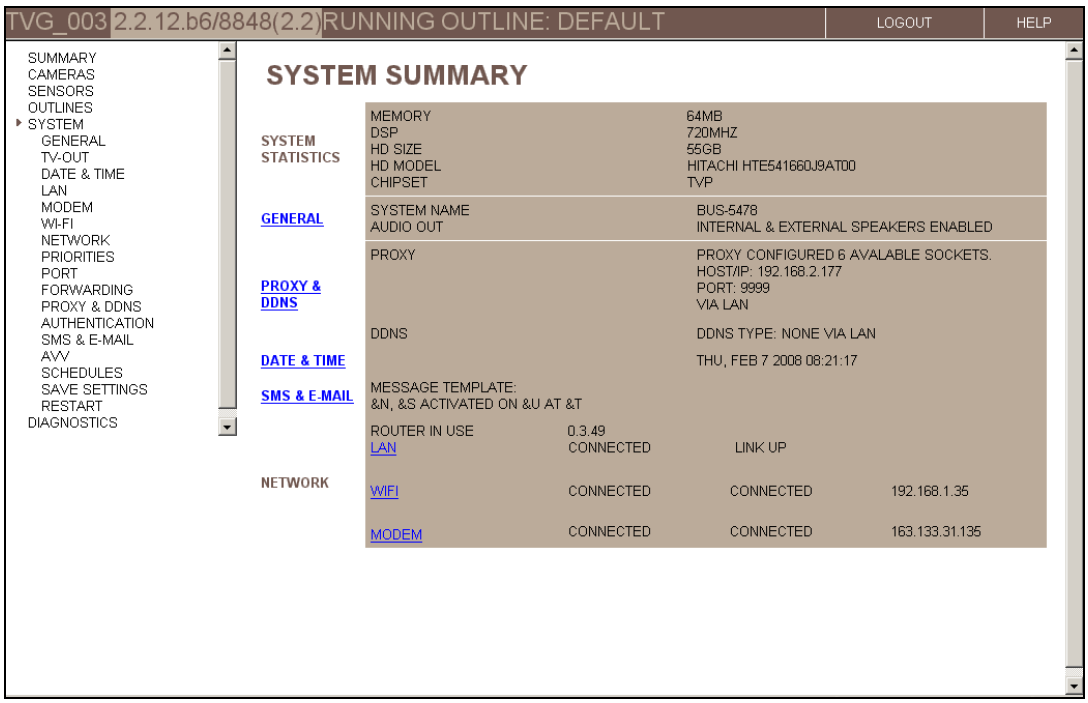


Figure 35: System Summary screen

The following system configuration screens are available:

- **General:** Unit name, port number, and activation of certain options (see page 47)
- **TV-Out:** Configuration of a closed-circuit monitor (CCTV) connected to the MVG 400 (see page 54)
- **Date & Time:** Automatic and manual time setting (see page 57)
- **LAN:** Local network settings (see page 63)
- **Modem:** Cellular modem configuration (see page 65)
- **WiFi:** Wireless network connection settings (see page 68)
- **Network Priorities:** Ranking the available network connections for outgoing communication from the unit to other networks, to indicate which connections should be tried first (see page 73)

- **Port Forwarding:** Configuring ports that allow external devices to connect to devices within the local network managed by the MVG 400's router (see page 74)
- **Proxy and DDNS:** Proxy and DDNS settings (see page 76)
- **Authentication:** Usernames and passwords for accessing and configuring the unit (see page 80)
- **SMS & E-mail:** Event notification settings (see page 81)
- **AVV:** Configuration of automatic uploading of video to an ftp server (see page 87)

NOTE: The **System** menu also contains links to the **Schedules**, **Save Settings** and **Restart** screens. For information about these screens, see *Schedules*, page 129; *Saving Configuration Changes*, page 139, *Resetting the Unit*, page 154.

⇨ *To open the System Summary screen:*

- In the **Main Menu**, click **System**.

General System Settings

The general system settings are the basic settings for the unit: the name of the unit, the port it uses for communication, and activation of certain optional features:

- **Audio Out:** Enables internal and external speakers. When they are enabled, remote users can speak into a microphone on a client device and be heard through the unit's speakers on-site. (At present, the MultiClient and the Symbian S60 cell-phone client applications support this feature.)
- **Audio In:** Enables microphones. When microphones are connected and enabled, audio from the site can be heard along with live and recorded video.
- **GPS:** Enables tracking the location of the vehicle by means of the built-in GPS receiver. For information about viewing the vehicle location on a map, and tracking the route taken by the vehicle, please refer to the *MultiClient User Guide*.
- **Ignition:** Defines whether the unit should automatically shut down when the vehicle ignition is turned off and, if so, how long the unit should continue operating after the ignition is turned off before it shuts down.
- **Stop Recording on Download:** Stops all video recording when video is being downloaded from the MVG 400. This option increases the download speed, because it allocates more of the unit's resources to the download task. However, it also means that there may be gaps in the recorded video at the times that the video is downloaded.
- **Accept New Connections while Downloading:** Enables streaming of new live or recorded video streams to a client application while downloading of recorded video to a PC is taking place. When this option is selected, the process of downloading may take somewhat longer to be completed. In addition, the video displayed in the client may be slightly distorted at times while the download is in progress. When this option is not selected, transmission of new live or recorded video streams to client applications does not take place while downloading is underway.

- **Video Authentication:** Adds a digital signature to each frame of video captured by the system. This signature makes it possible to identify frames that have been tampered with. When a SerVision client application plays video that has a digital signature and discovers a frame that has been changed from its original state, the status of the steam indicates that the stream was modified. (Note: Only the newest versions of the MultiClient and the Player support this feature.)
- **Outline Switching:** Defines what type of automatic trigger will cause the system to activate different outlines. Outline-switching can be triggered automatically in response to sensor events (from Sensor 1) or according to a schedule.
- **LAN Optimization:** Speeds up the transmission of live video from the MVG 400 to PCs on the same LAN. This feature is not recommended for use with other types of client connections – internet, cellular, etc.
- **SMS on System Start:** Sends SMS notifications to all SMS recipients whenever the MVG 400 starts running. For information about defining SMS recipients, see *SMS and E-mail Notifications*, page 81.
- **ADAM Sensors:** Enables the activation of sensors that are connected to the MVG 400 unit through an ADAM module. For additional information, see *Connecting Sensors Using an ADAM Module*, page 18; *Sensor and Activator Settings*, page 115.

About Ports

The unit has two access ports:

- Port 10000, which is intended for configuration and is always open for incoming connections.
- System port, which is intended for client connections, and can be configured. The default number of this port appears on the sticker on the underside of the unit. (It is usually 9988.) You can configure this port as necessary to suit the requirements of your network.

NOTE: If port forwarding in your network cannot be set up for port 10000, you can use the system port for remote configuration as well as client connections.

Configuring General System Settings

⇨ *To adjust the general system settings:*

1. In the **Main Menu**, under **System**, click **General**. The **General System Settings** screen opens:

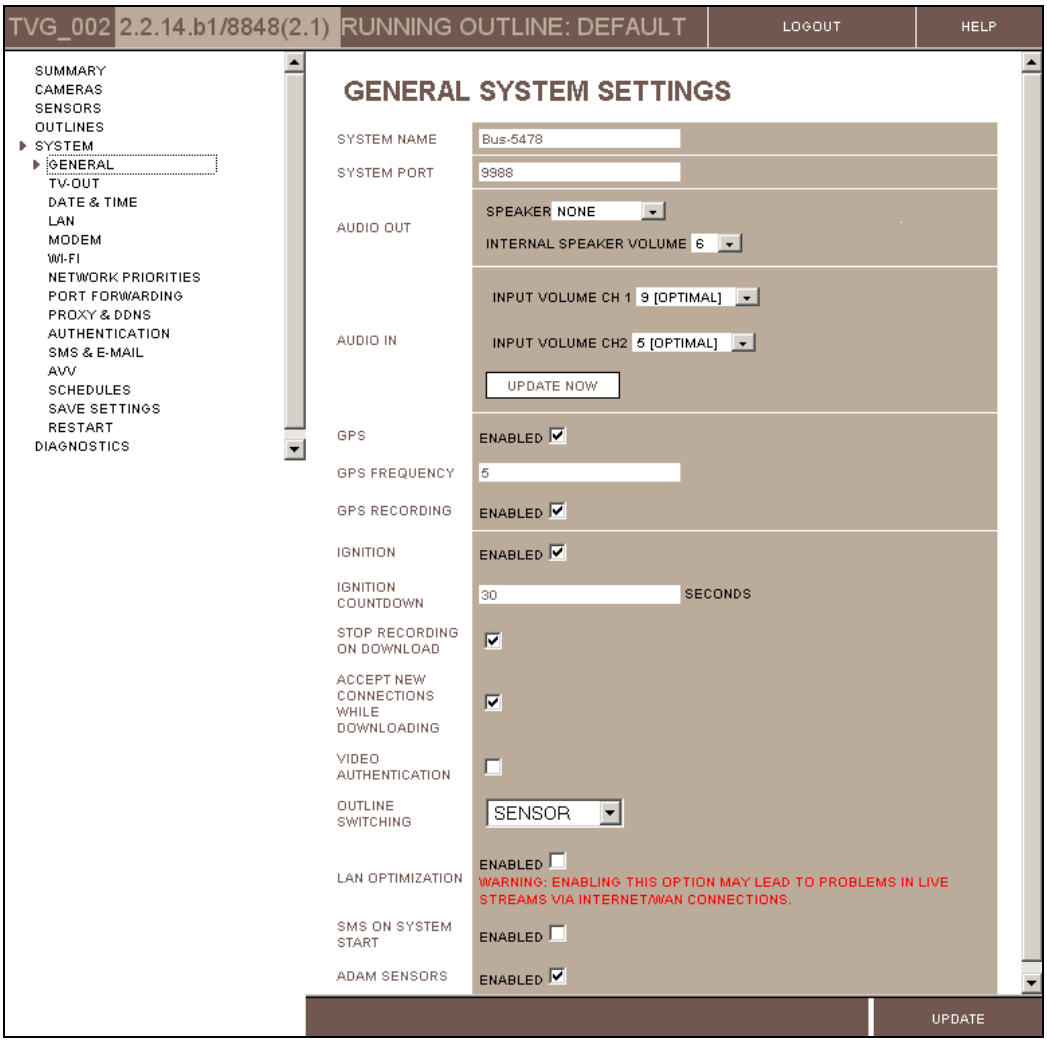


Figure 36: General System Settings screen

2. Fill in the fields as follows:

Field	Description
System Name	Assign a name to the MVG 400 unit (up to 20 Unicode (UTF-8) characters). This name is used to identify the unit in client applications such as the MultiClient, in SMS and e-mail notifications, in AVV file names, and on the proxy. Note: Spaces in the name may cause problems with various network functions, such as e-mail notifications, proxy, and DDNS. Therefore, it is recommended not to include any spaces in the name.
System Port	Fill in the client access port of the MVG 400 unit. Note: If you want to access the unit remotely and cannot set up port forwarding for port 10000 in your network, you can also

Field	Description
	access the configuration utility using this port.
Speaker	Under **Speaker**, select one of the following: • **None:** Disable both speakers. • **Internal:** Enable the internal speaker. (If an external speaker is connected to **Aout**, it is disabled.) • **External:** Enable the external speaker. (The internal speaker is disabled.) • **Both:** Enable both the internal speaker and the external speaker. (The same audio stream will be played on both speakers at the same time.) Note: This field controls the use of the speakers to play sound that is transmitted from a client device. Even if one or both of the speakers is disabled here, they can still be used to play audio when a CCTV is connected to the MVG 400. See *Configuring a CCTV Monitor (TV-Out)*, page 54.
Internal Speaker Volume	Set the output volume for the unit's built-in speaker. See *Configuring Microphone and* Speaker Volume, on page 52.
Input Volume Ch 1 / Input Volume Ch 2	Set the input volume for microphones connected to the unit. See *Configuring Microphone and* Speaker Volume, on page 52. Note: If the **Which input to use?** field appears, the unit only supports one microphone. Select the audio channel to which the microphone is connected from the dropdown list, and then set the input volume for that microphone as described below.
GPS	Select this option to enable tracking of the vehicle location by means of GPS. Note: For information about viewing the vehicle location on a map, and tracking the route taken by the vehicle, please refer to the *MultiClient User Guide*.
GPS Frequency	Specify how often the unit records its location, in seconds. Recommended value: 5. Note: Because GPS location recording requires system resources, it is not recommended to increase the frequency. While one check every five seconds is not sufficient for navigation via GPS, it provides ample information for tracking purposes.

Field	Description
GPS Recording	Select this option to record the results of each GPS location check. This option must be selected it you want to be able to see the route followed by the vehicle, or see where the vehicle was when a particular event occurred. Note: Clearing this option does not free disk space for other uses.
Ignition	Select this option if you want the unit to power down automatically whenever the ignition is turned off. If you do not select this option, the unit operates continuously as long as it has a power supply. Note: This setting only affects the unit if the unit is connected both directly to the battery and to the ignition. Otherwise, the unit operates continuously as long as it has a power supply (see *Connecting the Unit to the Vehicle Battery*, page 29).
Ignition Countdown	Select the amount of time that the unit should continue operating after the vehicle ignition is turned off, in seconds. Note: This setting only affects the unit if the unit is connected both directly to the battery and to the ignition. Otherwise, the unit operates continuously as long as it has a power supply (see *Connecting the Unit to the Vehicle Battery*, page 29). Note: This field only appears if the **Ignition** checkbox is selected.
Stop Recording on Download	Select this option to stop all video recording when video is being downloaded from the MVG 400.
Accept New Connections while Downloading	Select this option to enable the streaming of new live or recorded video streams to a client application while downloading of recorded video to a PC is taking place.
Video Authentication	Select this option if you want the system to include a digital signature in each video frame streamed and/or recorded by the unit. The signature can be used to identify streams that were tampered with. Note: This option increases the load on the system resources slightly, so it is advisable to activate it only if it is truly required.

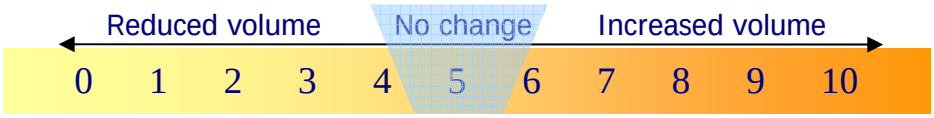
Field	Description
Outline Switching	Select one of the following types of triggers for activating different outlines: • **None:** No automatic outline switching – outlines can only be switched manually using in the configuration utility (see *Outlines*, page 124) • **Sensor:** Makes it possible to use Sensor 1 events as triggers for outline switching (see *Sensor and Activator Settings*, page 115) • **Schedule:** Makes it possible to schedule outline switching (see *Schedules*, page 129)
LAN Optimization	If video from the unit will be viewed primarily or exclusively on PCs that are on the same LAN as the unit, select this option to minimize the delay between the time a frame of live video is captured and the time it is transmitted to the MultiClient on the PC. That is, when this option is selected, live video will be played as close to real time as possible. Clear this option if live video will be viewed remotely via the internet or a modem connection.
SMS on System Start	Select this option if you want the unit to send SMS notifications whenever it starts running.
ADAM Sensors	If sensors are connected to the unit through an ADAM module, select **Enabled**. This makes it possible to activate and configure the sensors. For additional information, see *Connecting Sensors Using an ADAM Module*, page 18; *Sensor and Activator Settings*, page 115.

3. Click **Update**, and then save the settings. They will be implemented after the gateway is restarted (see *Saving Configuration Changes*, page 139).

Configuring Microphone and Speaker Volume

The volume of attached microphones and of the internal speaker can be digitally increased or decreased by the MVG 400. Microphone volume can be modified to optimize the sound level of audio that is played by client software. Internal speaker volume can be adjusted to suit the location of the MVG 400 unit and the needs of those on-site.

You can choose from 11 levels of amplification. Level 5 means the volume is not modified at all. Levels 0 through 4 cause the volume to be reduced (the smaller the number, the greater the reduction); levels 6 through 10 cause it to be amplified (the greater the number, the greater the amplification). Level 6 is generally optimal for the internal speaker, level 9 for passive microphones (**Ain 1** – channel 1), and level 5 for active microphones (**Ain2** – channel 2).



You can test the volume settings as you configure them by connecting to the MVG 400 using a client application. Volume levels can be adjusted for testing purposes without resetting the MVG 400 unit.

➪ *To configure the volume of the internal speaker:*

1. Make sure someone is near the MVG 400 to listen to sound being transmitted from the speaker.

2. Using a client application that can transmit audio to a video gateway (the MultiClient and the Symbian S60 cell-phone client applications), connect to the MVG 400.

3. Speak into the microphone of the client device and check with the listener to find out if the volume is appropriate. If it is not, adjust the settings as described below until they are satisfactory.

4. In the **General System Settings** screen, under **Internal Speaker Volume**, select a volume setting.

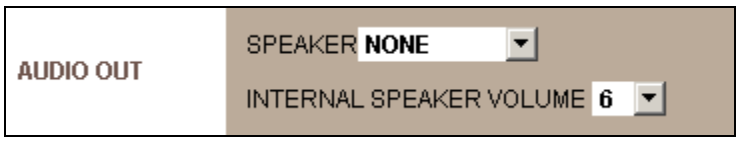


Figure 37: Speaker volume settings

5. Click **Update Now**. The volume settings are updated on the MVG 400 immediately

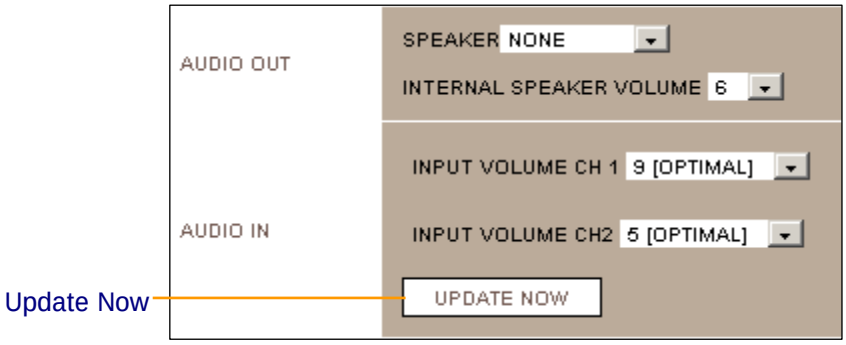


Figure 38: Update Now button

Note: All of the settings on the page are saved when you click **Update Now**. The volume settings are implemented immediately, and the changes to the other settings are implemented after the unit is restarted (see *Saving Configuration Changes*, page 139). If you modify the volume settings and click the **Update** button in the lower-right corner of the screen, the volume settings are not implemented until the unit is restarted.

6. Repeat steps 3–5 as necessary until the optimal volume setting is selected.

⇨ *To configure the volume of a microphone:*

1. Open the client application for which you want to optimize the settings (e.g., the MultiClient), connect to a live video stream that is linked to the microphone, and listen to the sound. If the volume needs adjustment, adjust it as explained in the following steps.

2. In the **General System Settings** screen, under **Audio In**, select a volume setting for the relevant microphone ("CH 1" for **Ain1**; "CH 2" for **Ain2**).

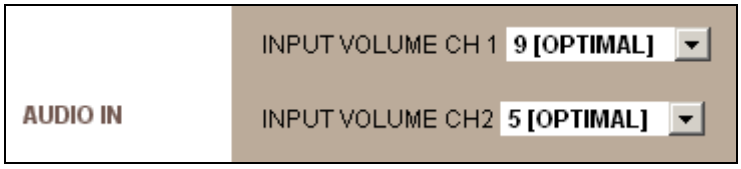


Figure 39: Microphone volume settings

3. Click **Update Now** (see figure *38* on page 53). The volume settings are updated on the MVG 400 immediately.

   Note: All of the settings on the page are saved when you click **Update Now**. The volume settings are implemented immediately, and the changes to the other settings are implemented after the unit is restarted (see *Saving Configuration Changes*, page 139). If you modify the volume settings and click the **Update** button in the lower-right corner of the screen, the volume settings are not implemented until the unit is restarted.

4. In the client application, listen to the audio from the video stream that is linked to the microphone.

5. Repeat steps 2–4 as necessary until the optimal volume setting is selected.

Configuring a CCTV Monitor (TV-Out)

If a video monitor is connected to your MVG 400, you must activate and configure it before you can see video from the MVG 400 on it.

NOTE: For additional information about setting up a CCTV monitor and viewing video on it, see *Connecting a CCTV Monitor*, page 24; *Viewing Video on a CCTV Monitor* (TV-Out), page 152.

⇨ *To enable and configure a CCTV monitor:*

1. In the **Main Menu**, under **System**, click **TV-Out**. The **TV-Out Settings** screen opens:

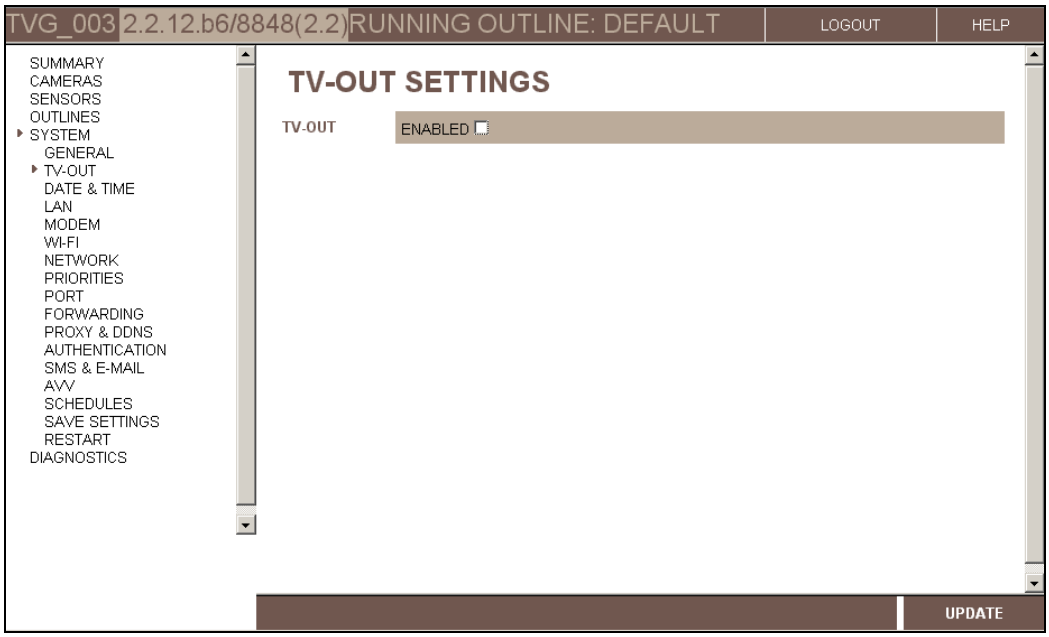


Figure 40: TV-Out Settings screen

2. Select **Enabled**. The fields required to configure the monitor display are added to the screen:

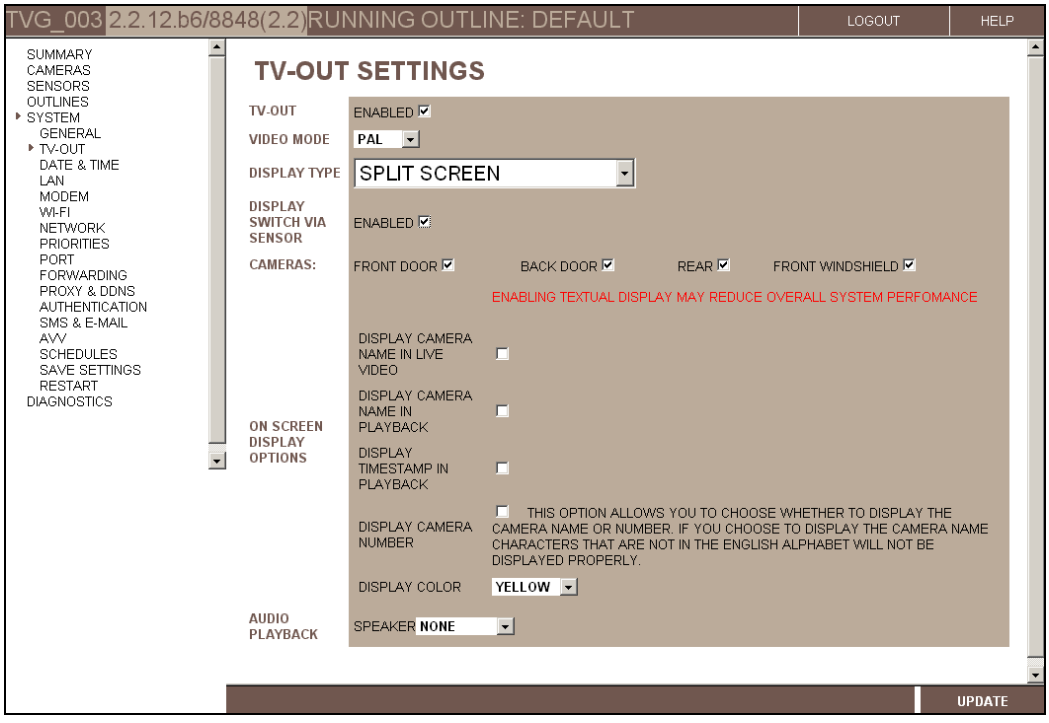


Figure 41: TV-Out settings

3. Fill in the fields as follows:

Field	Description
Video mode	Select the video format used by the monitor. Note: Some SECAM monitors are compatible with the system. If they are, they should work when the PAL video mode is selected.
Display type	Select the desired layout for the video display on the monitor: • **Split Screen:** Divides the screen so that video from all the cameras is visible all the time • **Full Screen – Camera #:** Displays video from the specified camera in full-screen mode • **Full Screen – Rotate:** Loops through all of the cameras, displaying each in full-screen mode for the number of seconds specified under **Rotate delay**
Rotate delay	If you selected the **Full Screen – Rotate** display type, specify the number of seconds you want the video from each camera to be displayed before it is replaced with video from the next camera.
Display Switch Via Sensor	Select this option if Sensor 4 is a switch that you want to use to cycle through the various display types. Note: This option is only fully activated if it is selected here and configured in the Sensor 4 configuration screen, as described under *Configuring Sensor 4 to Control CCTV Display*, page 123.
Cameras	Select the cameras that will be accessible via the monitor. Cameras that are not selected do not appear in the monitor at all. Video from these cameras cannot be viewed on the monitor and the cameras cannot be configured through the monitor.
Display Camera Name in Live Video	Select this option if you want the name of the camera to be displayed in the camera pane when video is played on the monitor. Note: Displaying names on the monitor requires extra system resources and may impede performance. Note: If both this option and **Display Camera Number** (see below) are selected, the index of the camera (1, 2, 3, or 4) is displayed instead of its name.
Display Camera Name in Playback	[Not currently in use.]
Display Timestamp in Playback	[Not currently in use.]

Field	Description
Display Camera Number	If you chose to display the camera name for live and/or recorded video, select this option if you want to display the camera number instead of its name. This is particularly useful if the name contains non-English characters that are not displayed properly on the monitor. Note: This option has no effect if **Display Camera Name in Live Video** is not selected.

4. Under **Display Color**, select the color in which on-screen text should be displayed. You can choose one of five preset colors, or select any color you wish by specifying its RGB hexadecimal code, as follows:

   - To select one of the preset colors, from the dropdown list, select **Yellow**, **Orange**, **Black**, **Blue**, or **Red**. Skip to step 6.
   - To specify a hexadecimal code: from the dropdown list, select **Other**. The fields required are added to the screen. The hexadecimal code field displays the hexadecimal code of the currently selected color. The code consists of three two-digit hexadecimal numbers, for the red, green, and blue components of the color, respectively. The current color is displayed as the background to the **Test Color** button.

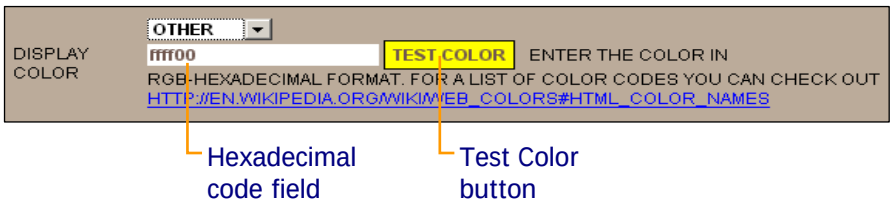


Figure 42: Hexadecimal number field

5. Type the desired hexadecimal code into the field. To see what the color looks like, click **Test Color**.

   Note: For more information about RGB hexadecimal codes, click the link below the fields.

6. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

   Note: The **Audio Playback** option is not currently in use.

Setting the Unit Time

The unit has a built-in battery-backed clock that keeps track of the date and time even when the unit is turned off. It is important to ensure that the time on the unit is accurate whenever the system is running; all video recordings include timestamps that are derived from the unit's time, and playback relies on these timestamps. An inaccurate clock can lead to

misunderstandings when playing recorded video. Moreover, the unit will not record if the time on it is invalid.

The clock can be set by manually synchronizing its time with the time on the PC on which the configuration utility is running. This should be done when the system is first set up.

Like most clocks, the unit's clock has a tendency to drift slightly over time. Therefore, the time should be updated at frequent intervals. The time can be updated manually at any time. The unit can also be configured to update its clock automatically by connecting to an NTP time server at specified intervals. This option only works when the unit has access to one or more NTP time servers, either public ones on the internet or locally-installed ones on the LAN. Public NTP servers can be used free of charge and can be easily accessed when the unit has internet access.

In addition to the time itself, the general time settings – time zone and daylight savings time (summer time) – should always be configured correctly. The time zone should be set correctly before the clock is set. (After setting the time zone, be sure to click **Update** before manually updating the time.) Daylight savings time can be activated manually or configured for automatic activation. It should be activated when daylight savings time begins and deactivated manually when it ends. When daylight savings time is activated, the time on the unit clock is set one hour ahead of the time in the selected time zone.

⇨ *To set the general time settings:*

1. In the **Main Menu**, under **System**, click **Date & Time**. The **Date & Time Settings** screen opens:

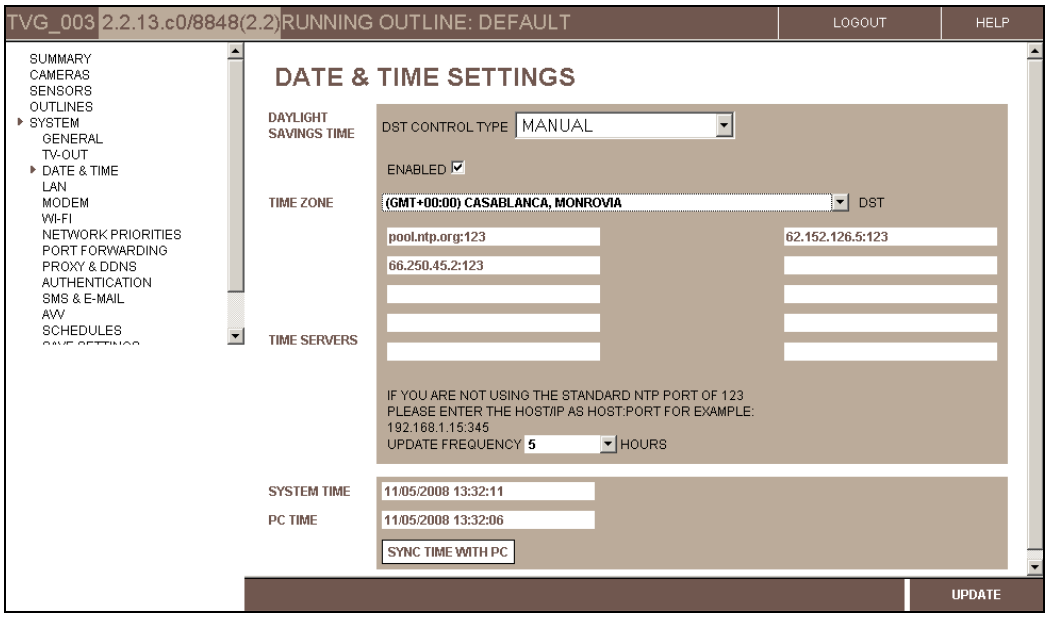
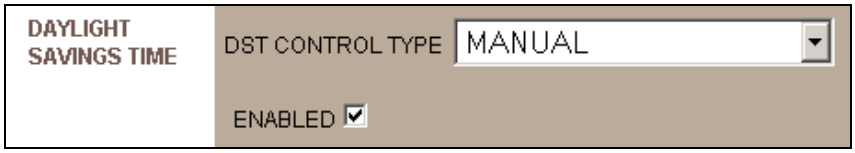
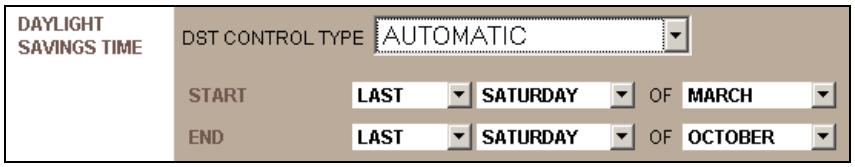
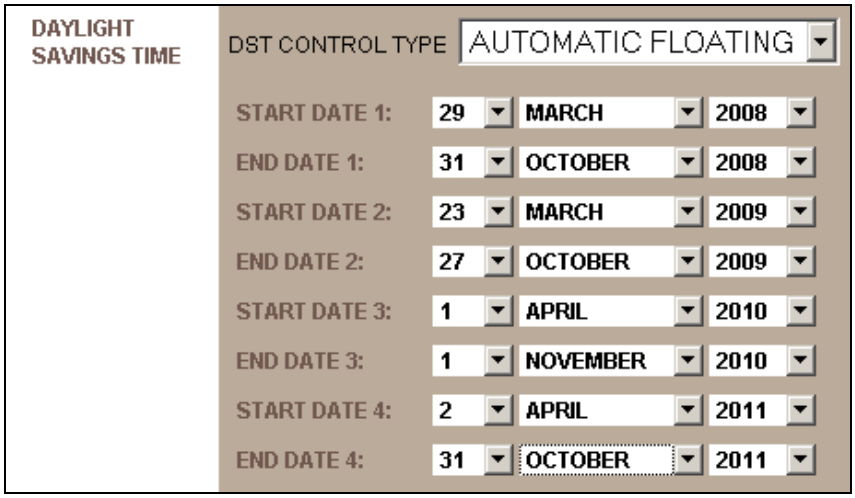


Figure 43: Date & Time Settings screen

Note: The current date and time recorded on the clock of the MVG 400 unit appear in the **System Time** field.

2. Under **DST Control Type**, select one of the following options:

Option	Description
Manual	Lets you activate and deactivate daylight savings time manually. When this option is selected, the **Enabled** checkbox appears below the **DST Control Type** field. Select this checkbox when daylight savings time begins, and clear it when daylight savings time ends.  ***Figure 44: Manual DST settings***
Automatic	Lets you define a rule for the automatic activation and deactivation of daylight savings time. For example, you can specify that daylight time should be activated on the last Sunday of March. When this option is selected, the **Start** and **End** lines appear below the **DST Control Type** field. In the **Start** line, specify the start date of daylight savings time; in the **End** line, specify the end date.  ***Figure 45: Automatic DST settings***
Automatic Floating	Lets you specify the start and end dates of daylight savings time. When this option is selected, four pairs of **Start Date** and **End Date** fields appear below the **DST Control Type** field. Use them to define up to four daylight-savings-time periods (covering the next four years).  ***Figure 46: Automatic-Floating DST settings***

Note: When daylight savings time is activated or deactivated automatically, the change is implemented at midnight at the beginning of the selected day. For example, if you select Saturday, it is implemented at midnight between Friday and Saturday.

Note: When daylight savings time is activated, the time on the unit clock is set one hour ahead of the time in the selected time zone.

3. Under **Time Zone**, select the time zone in which the MVG 400 is located.

4. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Updating the Date and Time Manually

You should set the unit date and time manually when you first set up the system and when the MVG 400 has not been used for a while. If you cannot or do not want to implement automatic time setting, you should also update the time manually whenever the date and time are no longer accurate.

You can see the current date and time settings of the MVG 400 unit and of the PC in the **Date and Time Settings** screen; the time on the MVG 400 unit is shown in the **System time** field and the time on your computer is shown in the **PC time** field. Before you manually set the date and time on the MVG 400 unit, make sure the date and time on the PC are correct.

The system stores time in GMT. Because of this, it is very important to ensure that the time zone and daylight savings time settings are identical on the PC and the MVG 400. For example, if the PC is located in New York, the system should be set to use GMT-5:00 (Eastern Time). If daylight savings time is in effect in New York at the time, daylight savings time must be activated on the MVG 400 or the GMT conversion will not be accurate and the time entered on the unit will not be correct.

Because time setting must be performed immediately to be accurate, the unit is automatically updated as soon as the **Sync time with PC** button is clicked. (The unit should still be reset manually to fully implement the new time setting.) If other configuration changes were made – including daylight savings time and time zone settings – be sure to save the changes before using the Sync feature (it is not necessary to restart the system). Changes that were not saved before the Sync operation are lost when the Sync is implemented. For additional information about saving configuration changes, see page 139.

Under certain circumstances, resetting the time may make it impossible to view some recorded video, including some video that is recorded after the time is set.

⇨ *To update the time on the MVG 400 unit manually:*

1. Make sure the date, time, and time zone on the PC are correct.

   Note: The current date and time recorded on the clock of the MVG 400 unit appear in the **System Time** field.

   Note: If you have made other changes to the configuration, save them before continuing.

2. In the **Date and Time Settings** screen, click the **Sync time with PC** button. The date and time on the MVG 400 unit are set to match the date and time on the PC, a confirmation message appears at the top of the screen, and the **System Restart Page** is displayed with a confirmation message on the lower left of the screen.

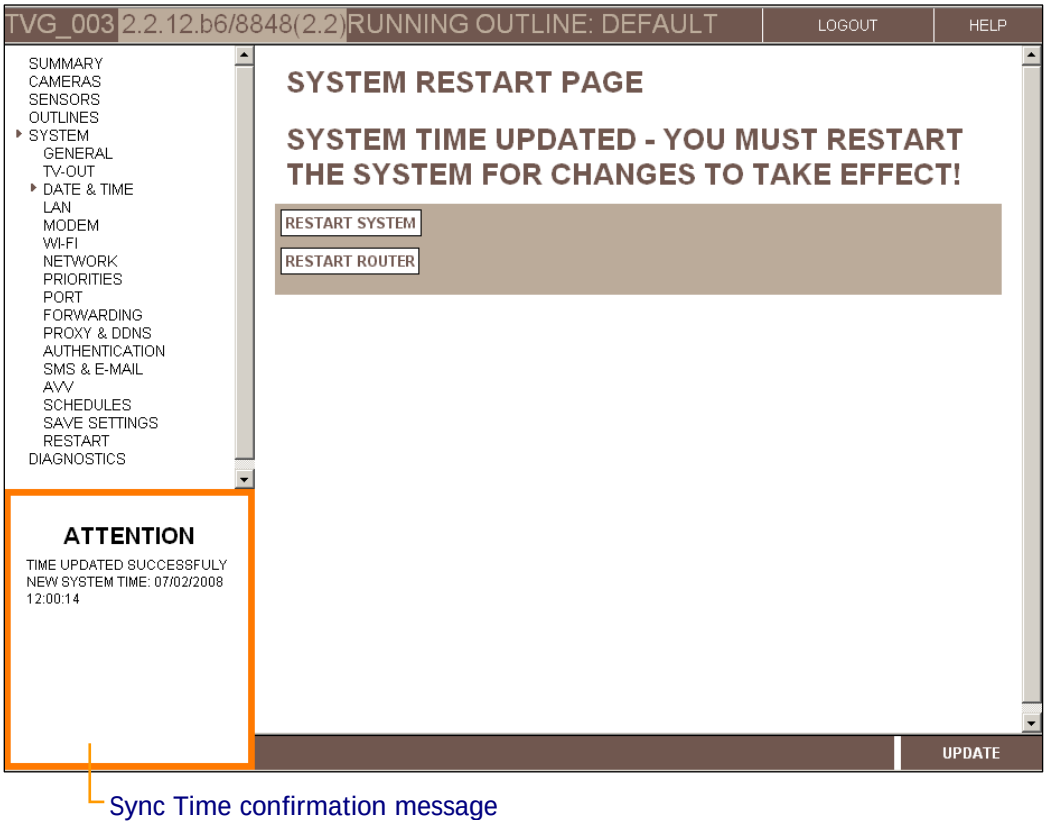


Figure 47: System Restart Page after manual time updating

NOTE: If the unit clock was set ahead more than about 15 minutes, the screen may display a message indicating that your configuration session has expired instead of the **System Restar**t page. This does not mean that the time was not reset correctly. However, you should still restart the unit to fully implement the update. To do this:

- Log into the configuration utility again.
- If you made changes to other configuration settings before you updated the time, and did not yet save them on the unit (i.e., you clicked **Update** in one or more of the screens, but did not yet save the changes in the **Save Settings** page), navigate to the **Save Settings** page, click **Save Changes to System**, and then, in the **System Restart** page, click **Restart System**.

  If you do not need to save any other changes, navigate directly to the **System Restart** page and click **Restart System**.

  For additional information, see *Saving Configuration Changes*, page 137.

3. Click **Restart System**. The unit restarts, and the time on the unit is fully updated. You are automatically logged out of the configuration utility, and a confirmation message appears:

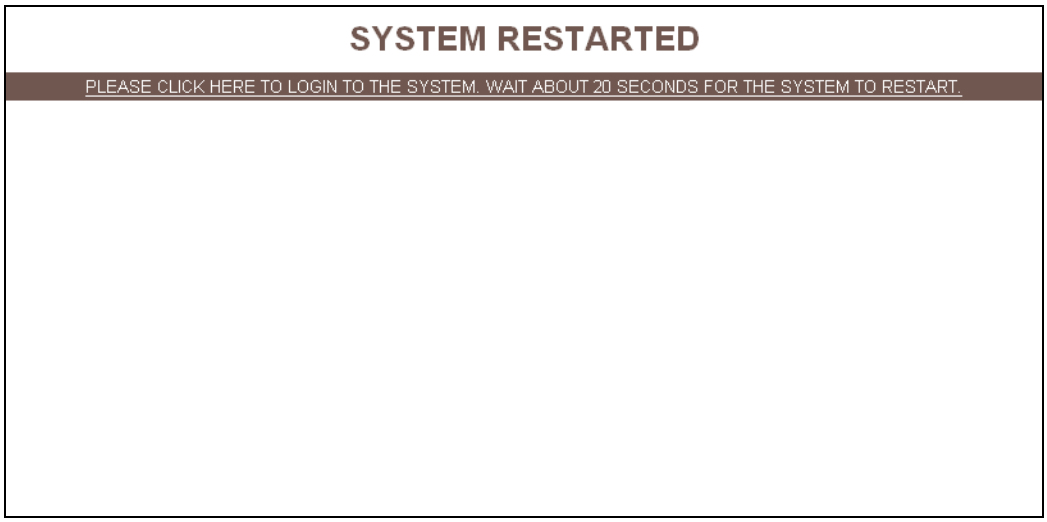


Figure 48: Restart confirmation message

Note: To continue configuring the unit, click the link in the message and log into the configuration utility again.

Note: If you do not reset the unit at this time, the time setting is partially implemented. The next time the unit is reset, the time change is fully implemented.

Configuring Automatic Time Setting

The default configuration includes a number of internet time servers to which the MVG 400 can connect in order to check the time. The unit automatically attempts to connect to a time server at specified intervals. Each time it attempts to connect, it begins with the first server listed. If it fails to connect to that server, it tries the next on the list, and so on. If you wish, you can replace any or all of the time servers on the list with other time servers, or add additional time servers, to a maximum of ten servers.

NOTE: If the MVG 400 unit is not connected to the internet most or all of the time, and no alternative local time server is available, this feature cannot be used to keep the unit time set accurately.

⇨ *To enable or disable automatic date and time setting:*

1. In the **Date & Time Settings** screen, under **Update Frequency**, select the interval between time checks, in hours. To disable automatic time setting, select **Disabled**.

2. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

⇨ *To specify other time servers:*

1. In the **Date & Time Settings** screen, under **Time Servers**, add the IP addresses or hostnames of additional time servers to the list, or replace existing IP addresses or hostnames with those of the time servers you want to use, as required.

Note: Most time servers use port 123. If a time server you want to use uses a different port, you must specify the port after the IP address or hostname. (Separate the address and the port with a colon (**:**). For example: `192.168.1.15:345`)

2. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

LAN Settings

The LAN settings define how the MVG 400 should connect to a cabled LAN – an external network to which it is connected via the Ethernet network cable (connected to the **Ethernet (Out)** connector). These settings are only relevant if the unit is connected to an external network via Ethernet cable (see *Setting Up Network Connections*, page 25).

The **LAN Settings** screen is used to select a connection method – static IP or DHCP – for the MVG 400 to use when connecting to a cabled LAN. If a static IP is to be used, you must find out what IP to use, and what the appropriate network settings are for the IP, before you begin: This information can be acquired from the network administrator.

⇨ *To adjust the LAN settings:*

1. In the **Main Menu**, under **System**, click **LAN**. The **LAN Settings** screen opens:

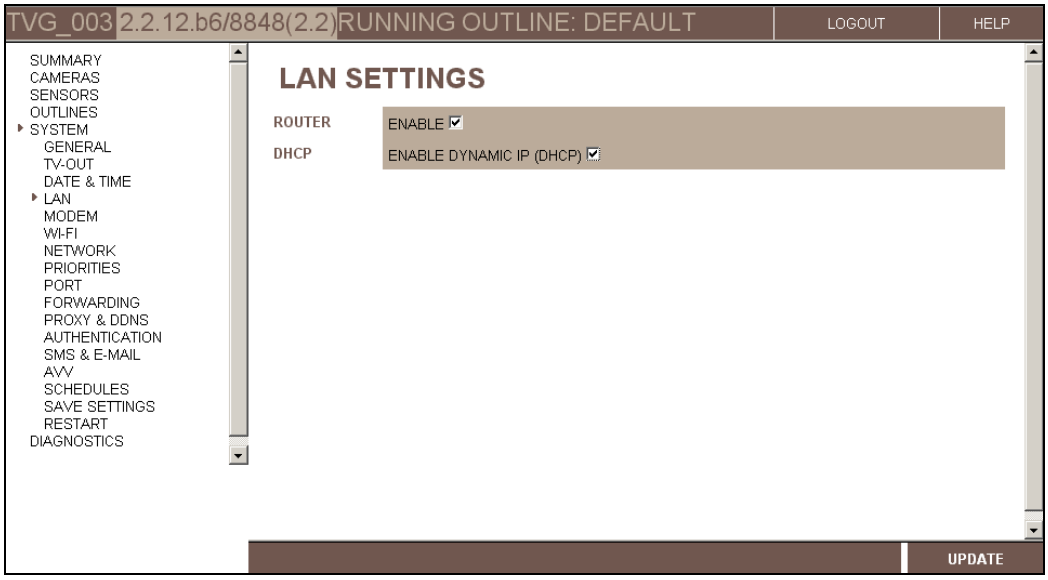


Figure 49: LAN Settings screen

2. Under **Router**, select **Enable**. (This is selected by default.)

3. If you want a dynamic IP address to be assigned to the unit by a DHCP server on the external LAN, select the **Enable Dynamic IP (DHCP)** checkbox.

   Note: If this field is selected, you may not be able to access the unit remotely.

   Note: If this field is selected, the **IP address**, **Subnet mask**, **Default Gateway**, and **DNS Server** fields are not relevant and are hidden.

4. If the unit will have a static IP address, clear the **Enable Dynamic IP (DHCP)** checkbox. The fields required to configure the LAN settings are added to the screen.

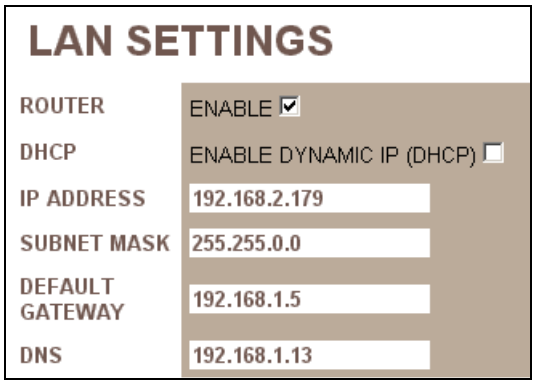


Figure 50: Static IP settings

Fill in the fields as follows:

Field	Description
IP Address	Specify the static IP address of the unit on the cabled LAN. The address should conform to the standards of the LAN.
Subnet Mask	Modify the LAN subnet mask as necessary. The subnet mask should conform to the one the LAN uses.
Default Gateway	Fill in the IP address of the gateway through which the LAN connects to the internet. If you do not know the IP address of the gateway, consult the network administrator or your ISP. Note: If this field is not filled in correctly, external network services will not be available through this network. These include accessing the unit remotely (even through proxy and DDNS services) and SMS and e-mail notifications.
DNS	Fill in the IP address of the DNS server. A DNS server enables you to enter names instead of IP addresses for the proxy and DDNS servers. The DNS server may be operated by your internet provider (home installation) or on your network (some office installations). If you do not know the IP address of the DNS server, consult the network administrator or the ISP. Note: If this field is not filled in correctly, you will not be able to specify IP addresses as host names. For example, the address of the SMTP e-mail server will have to be defined as IP numbers. In addition, DDNS will not perform updates if there is no valid DNS address.

5. Click **Update** and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Modem

Modem settings configure the system to use a cellular modem, if one is connected to the unit (see *Connecting the MVG 400 to an External Network*, page 26). When the modem is correctly configured, the MVG 400 automatically establishes a connection to a cellular network through it. Before you configure the modem, ask your cellular supplier for the correct settings.

NOTE: In general, if you use a cellular modem to make the MVG 400 accessible remotely, you will have to use a SerVision proxy server to facilitate client connections to the unit. For additional information, see *Proxy and DDNS Settings*, page 76.

When the unit is connected to a cellular network, the *Modem* status displayed in the **System Summary** screen in the network settings, is "Connected," and the IP address of the MVG 400 on the cellular network is displayed there.

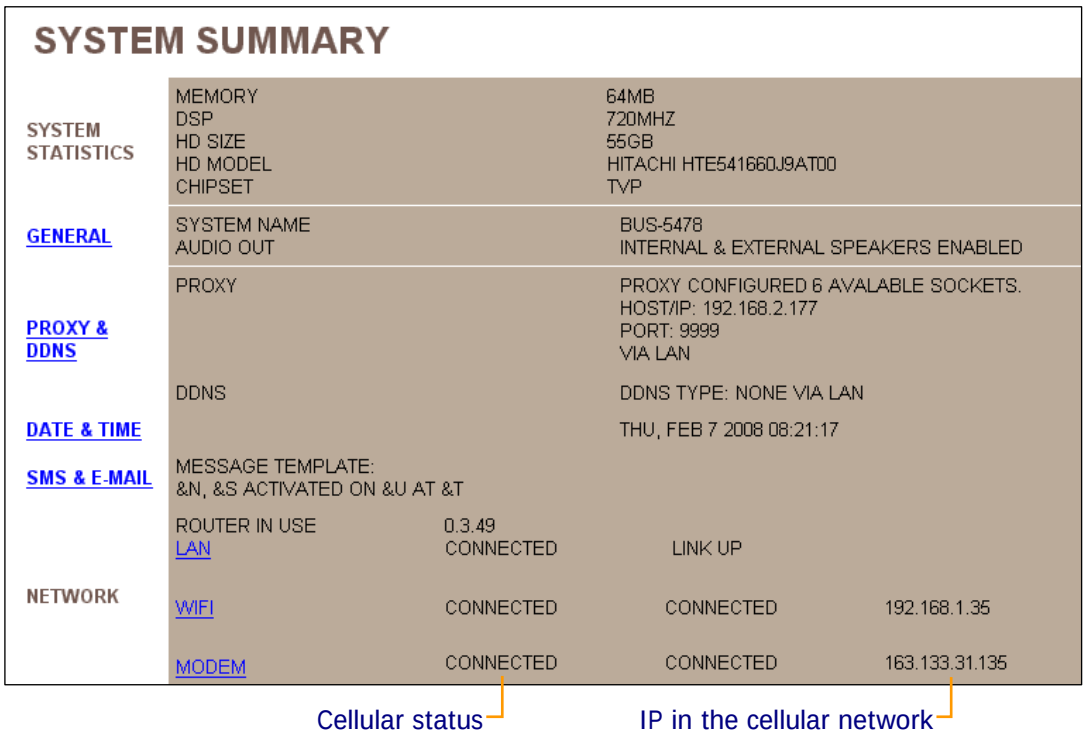


Figure 51: System Summary screen showing the MVG 400 connected to a cellular network

The system can be configured to automatically test the modem connection periodically once it is established. To do this, the unit uses a network feature called *LCP* to send a test "ping" to the network. If the connection is functioning properly, the network replies with a corresponding "ping" of its own. If the gateway receives no response from the network, it assumes the connection is no longer functional, and attempts to reconnect. In most cases, it is recommended that this feature be enabled. This feature is not available on all cellular networks and, as such, it is recommended that you contact your cellular provider for more information as to whether it should be used.

The unit does not have to be restarted before the cellular connection is established. This makes it possible to quickly test the settings. Nevertheless, it is important to save the settings

once they are correctly configured. Otherwise, the settings will be erased when the unit is next restarted.

NOTE: Unless you have made other changes to the system configuration that are only implemented after the system restarts, it is not necessary to restart the system after the modem settings are saved.

NOTE: Only one modem should be inserted into the unit at any given time. Inserting two modems simultaneously may lead to unpredictable and undesirable results.

➪ *To configure a cellular modem connected to the unit:*

1. In the **Main Menu**, under **System**, click **Modem**. The **Modem Configuration** screen opens:

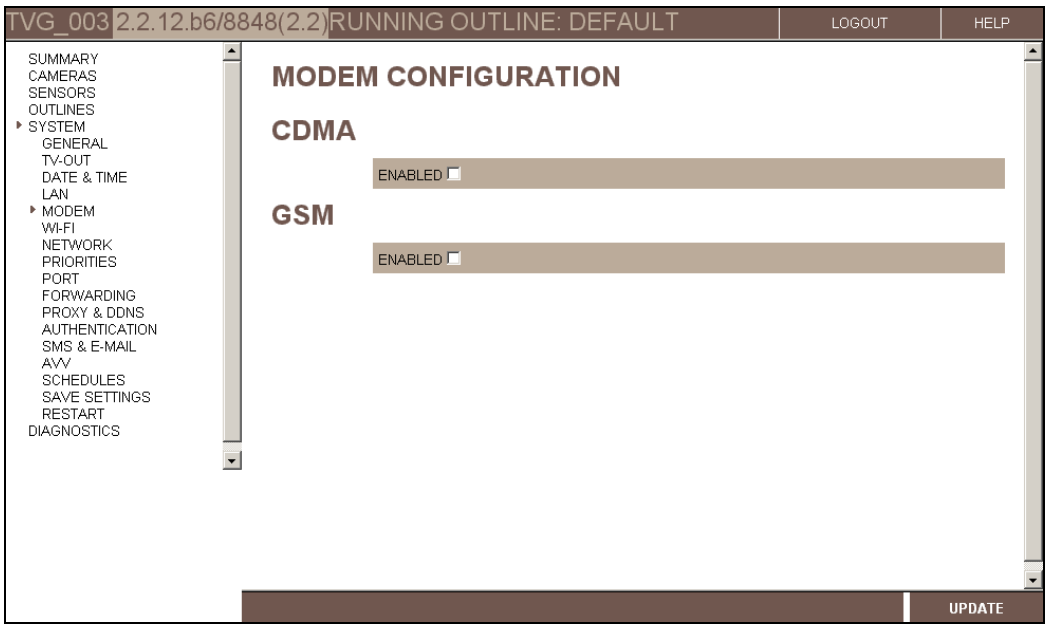


Figure 52: Modem Configuration screen

2. If the modem connects to a CDMA network, under **CDMA**, select **Enabled**. If the modem connects to a GSM network, under **GSM**, select **Enabled**. The fields required to configure the modem appear under the selected checkbox.

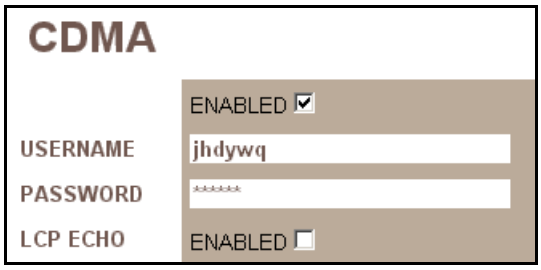


Figure 53: CDMA settings

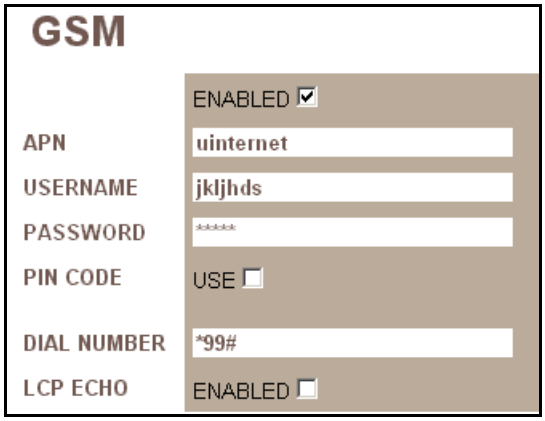


Figure 54: GSM settings

3. If CDMA is enabled, fill in the fields as follows:

Field	Description
User Name	If the cellular supplier requires a user name, fill in the user name.
Password	If the cellular supplier requires a password, fill in the password.
LCP Echo	Select **Enabled** if you want the system to periodically test the network connection after it is established (see page 65).

4. If GSM is enabled, fill in the fields as follows:

Field	Description
APN	Fill in the APN of the cellular network.
User Name	If the cellular supplier requires a user name, fill in the user name.
Password	If the cellular supplier requires a password, fill in the password.
PIN Code	If the SIM card of the modem requires a PIN to establish a connection, select **Use**. The **PIN Code** field is added to the screen. PIN CODE USE PIN CODE 1111 Type the PIN code into the field.
Dial Number	The phone number that the modem should dial to connect to the internet via the GSM cellular network. This number is normally ***99#** throughout the world.
LCP Echo	Select **Enabled** if you want the system to periodically test the network connection after it is established (see page 65).

5. Click **Update**. The settings are immediately implemented on the unit. If the modem is connected to the unit, and the configuration settings are correct, the unit connects to the cellular network through the modem.

6. Save the settings to implement them permanently (see *Saving Configuration Changes*, page 139). It is not necessary to restart the system.

WiFi

WiFi settings configure the system to use a WiFi card when the card is connected to the unit (see *Connecting the MVG 400 to an External Network*, page 26). When the WiFi card is correctly configured, the MVG 400 automatically establishes a connection to the specified wireless network through its access point (hotspot). If the access point is connected to the internet, the MVG 400 can use this connection to connect to the internet in order to send and receive data.

When the unit is connected to a WiFi network, the *WiFi* status displayed in the **System Summary** screen, in the network settings, is "Connected," and the MVG 400's IP in the wireless network is displayed.

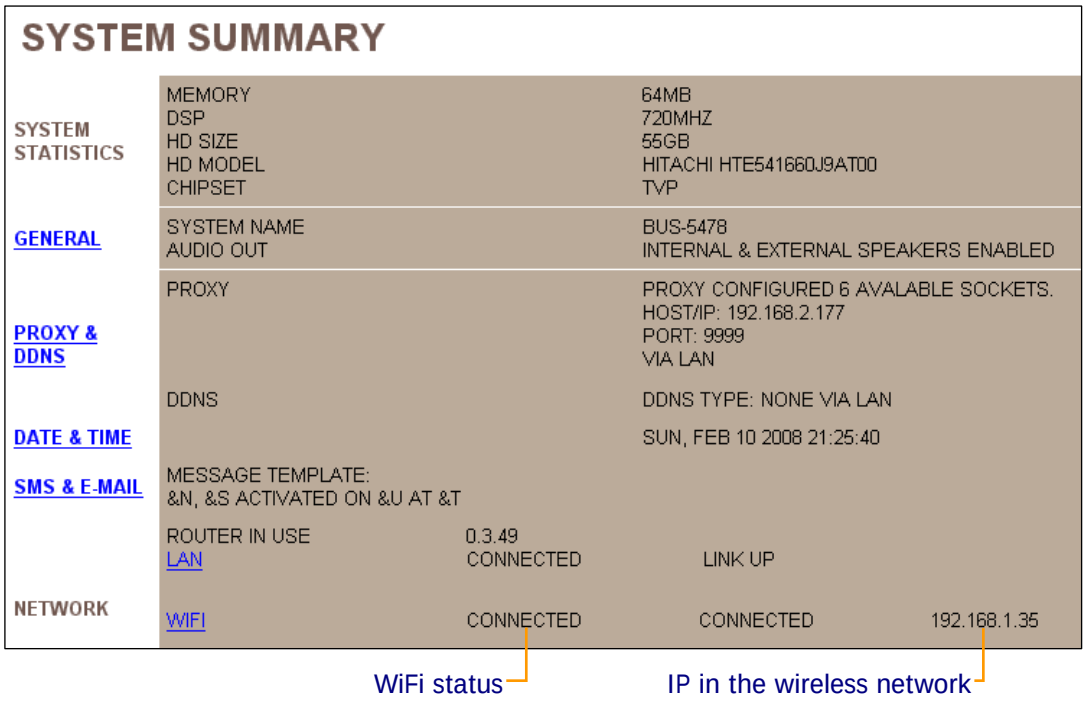


Figure 55: System Summary screen showing WiFi connected to access point

Specifying the Access Point

In order to connect to an access point, you must supply its *service set identifier* (SSID), which is essentially the name of the wireless network.

In addition, many access points employ an *encryption key* to prevent unauthorized connections. If the access point you specify requires an encryption key, you must supply this key if you want the unit to connect to the access point.

NOTE: Only WEP encryption is supported at this time. The MVG cannot connect to WiFi networks that use other encryption methods (such as WPA).

You can configure an access point even if no wireless card is connected to the unit, or when the access point is not within range of the unit. When a wireless card is installed, you can use it to help you add the access point, because it can detect all of the access points that are within range of its current location. It then automatically supplies the SSID of the access point.

The unit does not have to be restarted before the wireless connection is established. This makes it possible to quickly test the settings. Nevertheless, it is important to save the settings once they are correctly configured. Otherwise, the settings will be erased when the unit is next restarted.

NOTE: Unless you have made other changes to the system configuration that are only implemented after the system restarts, it is not necessary to restart the system after the WiFi settings are saved.

➪ *To configure an access point with a WiFi card connected to the unit and the access point in range:*

1. In the **Main Menu**, under **System**, click **WiFi**. The **WiFi Configuration** screen opens. The screen displays a list of access points that have been detected within range of the unit. (This may take a minute or two.) For each access point, the list indicates whether it requires an encryption key, and how strong the signal received by the unit from the access point is.

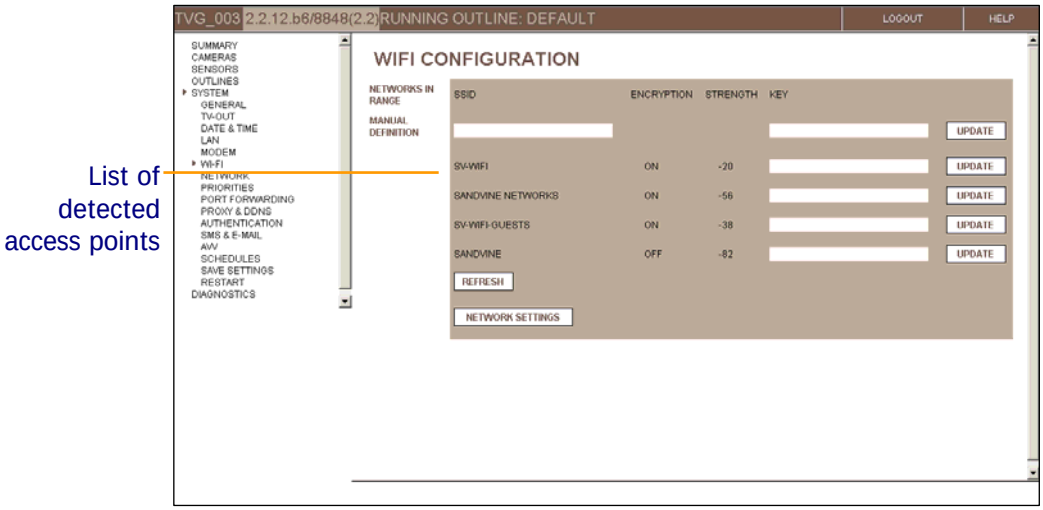


Figure 56: WiFi Configuration screen when a WiFi card is connected to the unit but no access point has been selected yet

Note: If you install a WiFi card when the unit is running, you must restart the unit to access the wireless networks.

2. If the access point to which you want the MVG 400 to connect requires a WEP encryption key, in the line in which the access point appears, under **Key**, fill in the encryption key.

3. In the line in which the access point appears, click **Update**. The access point is selected, and marked "In Use," and the MVG 400 connects to the wireless network. From this point on, whenever the MVG 400 unit comes within range of the access point, it will automatically connect to it.

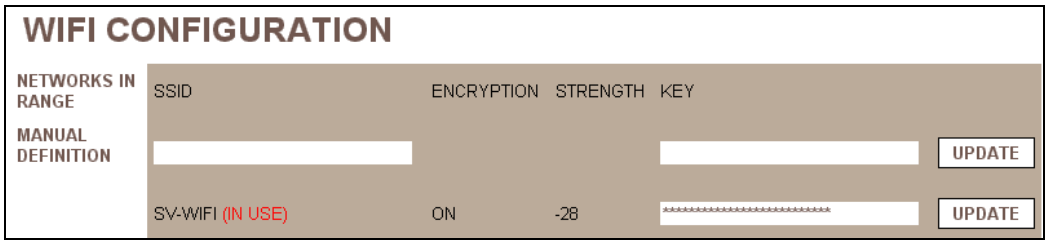


Figure 57: Access point selected (In Use)

Note: If the selected access point is not within range when the **WiFi Configuration** screen is opened, the **Current SSID** field is added to the screen. The field displays the name of the selected access point.

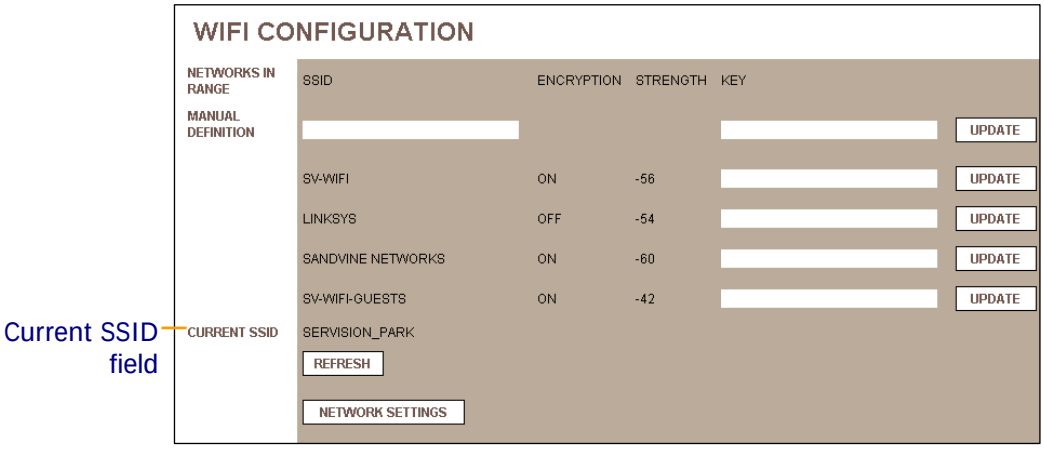


Figure 58: Current SSID field displaying currently selected access point

4. Save the settings to implement them permanently (see *Saving Configuration Changes*, page 139). It is not necessary to restart the system.

⇨ *To configure an access point without a WiFi card connected to the unit or when the access point is not in range:*

1. In the **Main Menu**, under **System**, click **WiFi**. The **WiFi Configuration** screen opens (This may take a minute or two.):

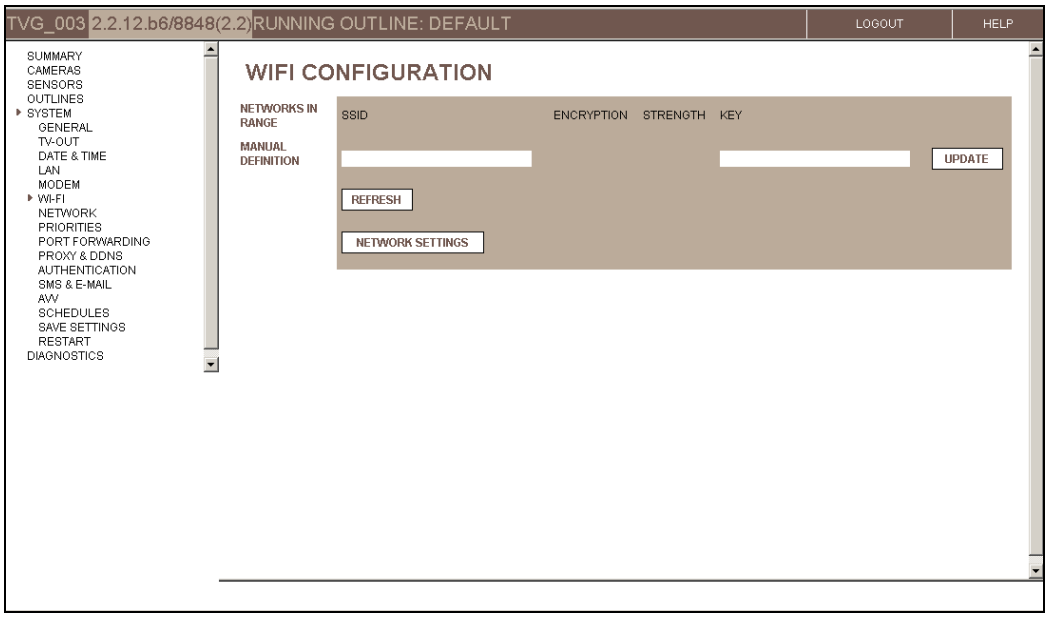


Figure 59: WiFi Configuration screen when no WiFi card is connected to the unit and an access point has not been manually configured

2. In the **Manual Definition** line, fill in the fields as follows:
   - Under **SSID**, fill in the SSID of the access point.
   - If the access point requires an encryption key, under **Key**, fill in the key.
3. In the **Manual Definition** line, click **Update**. The settings of the access point are saved, and the access point is selected. The **Current SSID** field is added to the screen and displays the name of the access point. If the MVG 400 unit comes within range of the specified access point, it will automatically connect to it and become part of the wireless network managed by the access point.

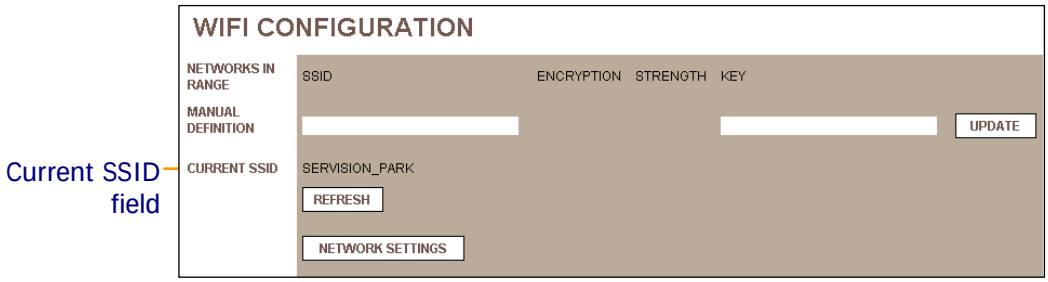


Figure 60: Current SSID field displaying currently selected access point

4. Save the settings and restart the unit to implement them permanently (see *Saving Configuration Changes*, page 139).

Setting Wireless Network Settings

By default, the MVG 400 is assigned a dynamic IP address in the wireless network when it connects to the access point. If the MVG 400 will only need to use the wireless network for outgoing connections to the internet, this is enough. If you need incoming access to the unit –

you want to be able to access the MVG 400 remotely – you should assign a static IP address to the unit instead.

⇨ *To assign a static IP address to the MVG 400 in the wireless network:*

1. In the **WiFi Configuration** screen, click **Network Settings**. The **WLAN Settings** screen opens.

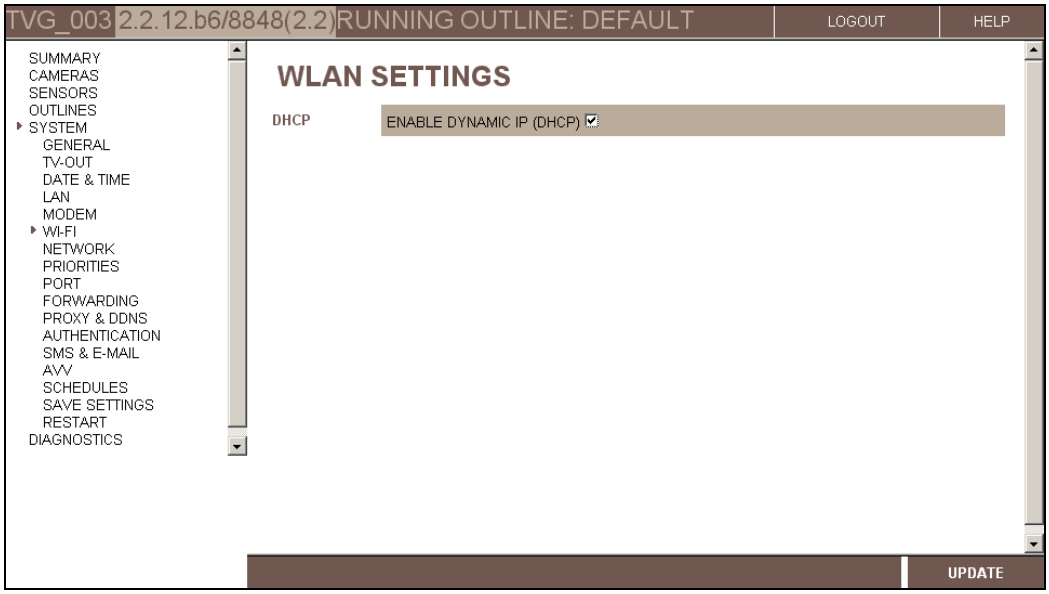


Figure 61: WLAN Settings screen

2. Clear the **Enable Dynamic IP (DHCP)** checkbox. The fields required to configure the static IP and other network settings are added to the screen.

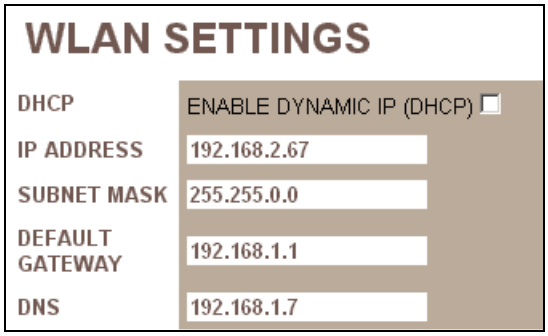


Figure 62: Settings for a static IP in the WiFi network

3. Fill in the fields as follows:

Field	Description
IP Address	Specify the static IP address of the unit in the wireless network. The address should conform to the standards used in the wireless network.
Subnet Mask	Fill in the subnet mask used in the wireless network.

Field	Description
Default Gateway	Fill in the IP address (on the wireless network) of the gateway used for WAN or internet access. If you do not know the internal IP address of the gateway, consult the network administrator. Note: If this field is not filled in correctly, external network services will not be available through this network. These include accessing the unit remotely (even through proxy and DDNS services) and SMS and e-mail notifications.
DNS	Fill in the IP address of the DNS server used by the access point. A DNS server enables you to enter names instead of IP addresses for the proxy and DDNS servers. If you do not know the IP address of the DNS server, consult the network administrator. Note: If this field is not filled in correctly, you will not be able to specify IP addresses as host names. For example, the address of the SMTP e-mail server will have to be defined as IP numbers. In addition, DDNS will not perform updates if there is no valid DNS address.

4. Click **Update** and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Network Priorities

If your system is configured to connect to more than one network, it can use any of the available networks for outgoing connections such as connecting to a proxy server or sending an e-mail notification. In this case, you should rank the available networks to indicate which one you would prefer the system to use for outgoing communications. For example, if the unit can connect to both a WiFi network and a cellular network, you would probably want to give the WiFi network priority over the cellular network, because it is faster and cheaper to use. In this case, the system would use the WiFi network whenever it was available; if it was not available, the system would use the cellular network instead.

The unit does not have to be restarted before changes to the network priorities settings are implemented. Nevertheless, it is important to save the settings once they are correctly configured. Otherwise, the settings will be erased when the unit is next restarted.

NOTE: Unless you have made other changes to the system configuration that are only implemented after the system restarts, it is not necessary to restart the system after the network priorities settings are saved.

⇨ *To prioritize the network connections:*

1. In the **Main Menu**, under **System**, click **Network Priorities**. The **Network Priorities** screen opens, and displays the three networks – **LAN**, **WLAN** (WiFi), and **Cell** (Modem) – in their current order of priority (the top network is ranked highest).

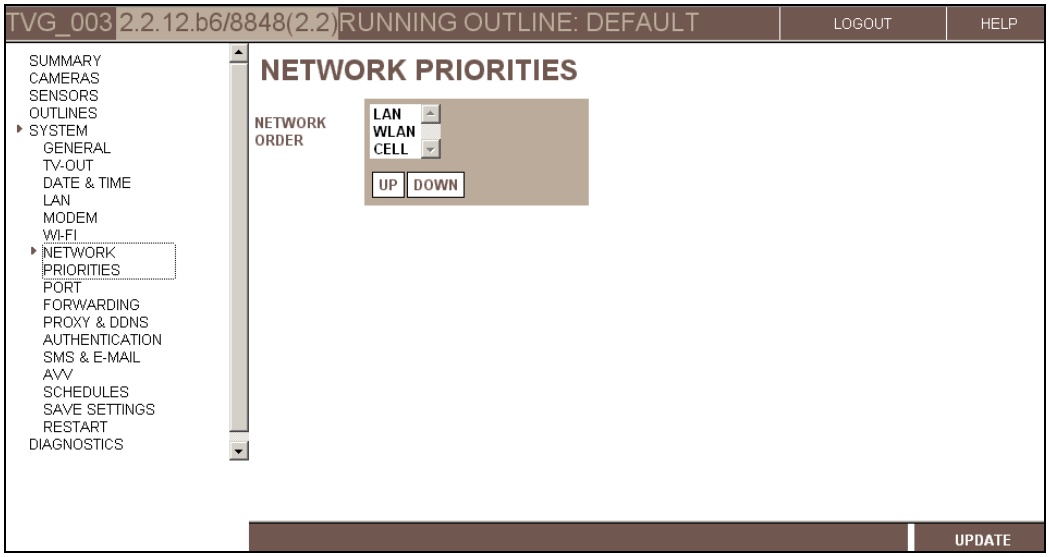


Figure 63: Network Priorities screen

2. To change the position of a network in the ranking, select the network type and then click **Up** or **Down**.

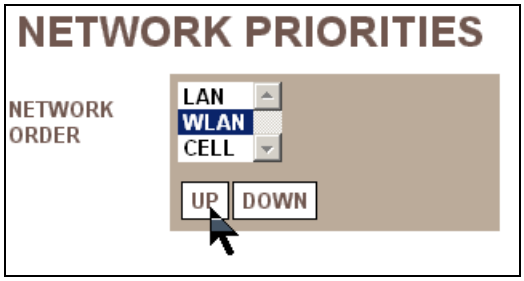


Figure 64: Moving a network up in the ranking

3. Click **Update**. The settings are immediately implemented on the unit.

4. Save the settings to implement them permanently (see *Saving Configuration Changes*, page 139). It is not necessary to restart the system.

Port Forwarding

Port forwarding makes it possible for remote devices to access devices within the MVG 400's local network. Each device that you want to make accessible to incoming connections is linked with a particular port of the router. To connect to the device remotely, you use the external IP address of the router (the IP address of the MVG 400 on the external network), and the assigned port number.

NOTE: Be sure to assign a static internal IP to the device before you set up port forwarding to it (see *Connecting Devices to the MVG 400's Internal Network*, page 27)

➪ *To configure port forwarding for a device connected to the unit's router:*

1. In the **Main Menu**, under **System**, click **Port Forwarding**. The **Port Forwarding** screen opens and displays a list of the ports that are already open for remote access and the internal IPs of the devices to which they provide access.

   Note: The system and configuration ports of the unit (see *About Ports*, page 48) are defined automatically by the system and cannot be modified.

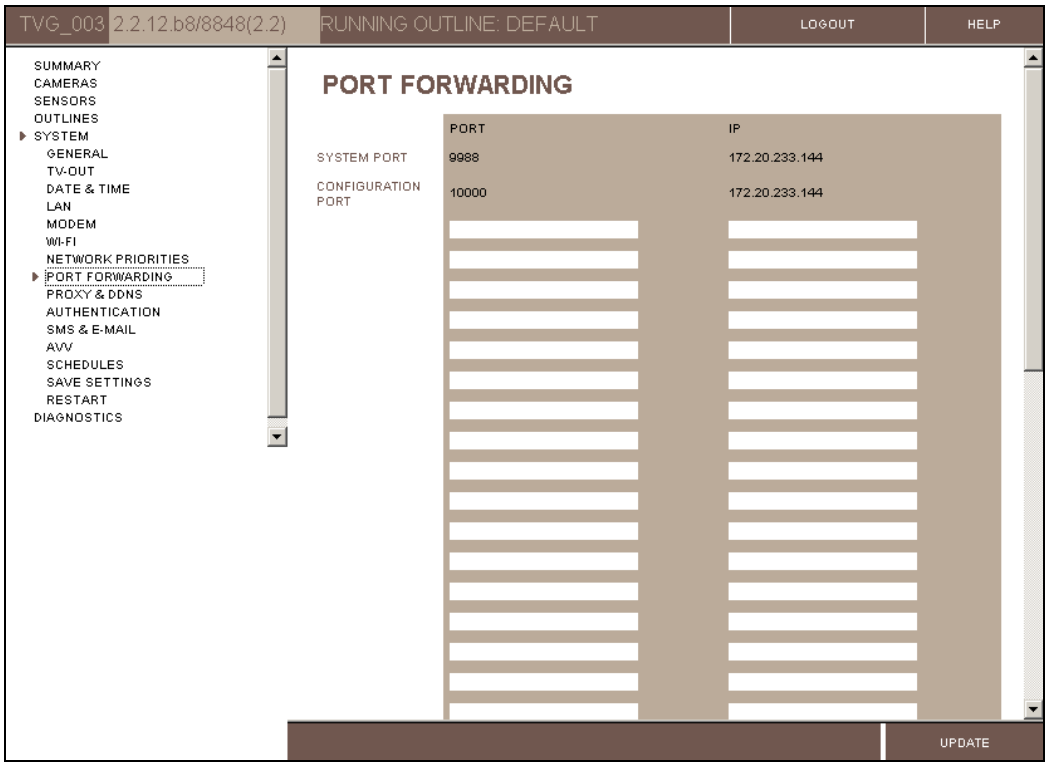


Figure 65: Port Forwarding screen

2. In the next available row in the table, fill in the fields as follows:

Field	Description
Port	The number of the port to assign to the device. You can choose any number in the range 1–65535 that is not already in use.
IP	The internal IP of the device

Figure 66: Adding a port

3. Click **Update** and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Proxy and DDNS Settings

Proxy and dynamic DNS (DDNS) services make it possible for clients to connect to routers that cannot be accessed directly.

A proxy server is used to enable client applications to connect to video gateway units like the MVG 400 when the connection cannot be directly *initiated* by the client. Typically, this occurs when the MVG 400 connects to the internet through the cellular network. It may also occur if the MVG 400 does not have a public IP address. The proxy server functions as an intermediary that relays requests and data between the MVG 400 and clients. When a proxy service is used, the MVG 400 initiates a connection with the proxy server and registers with it. Clients can then connect to the MVG 400 indirectly by connecting to the proxy server.

The MVG 400 can be configured to work with proxy services. When it is, it automatically registers with the proxy server each time it connects to a network. For additional information about proxy services in general and about proxy servers that are available for use please contact your vendor.

DDNS is designed to facilitate internet connections to systems that use dynamic public IP addresses (see *Connecting the MVG 400 to an External Network*, page 26). When a DDNS is used, the MVG 400 is assigned a name. The MVG 400 registers with the DDNS service each time it connects to the internet, and relays its current public IP address to the service. Client applications connect to the MVG 400 by using its name rather than its public IP address. The DDNS service ensures that the correct public IP address is linked to the name at all times.

The MVG 400 can be configured to work with DDNS services. When it is, it automatically registers with the DDNS each time its public IP changes.

Three DDNS services are supported by the system: SV-DDNS *(*SerVision's DDNS service), *No-IP*, and *DynDNS*. For information about the SV-DDNS service, consult your vendor. For information about the *No-IP* and *DynDNS* DDNS services, consult their websites (www.no-ip.com and www.dyndns.com).

⇨ *To adjust the Proxy and DDNS settings:*

1. In the **Main Menu**, under **System**, click **Proxy & DDNS**. The **Proxy and DDNS Settings** screen opens:

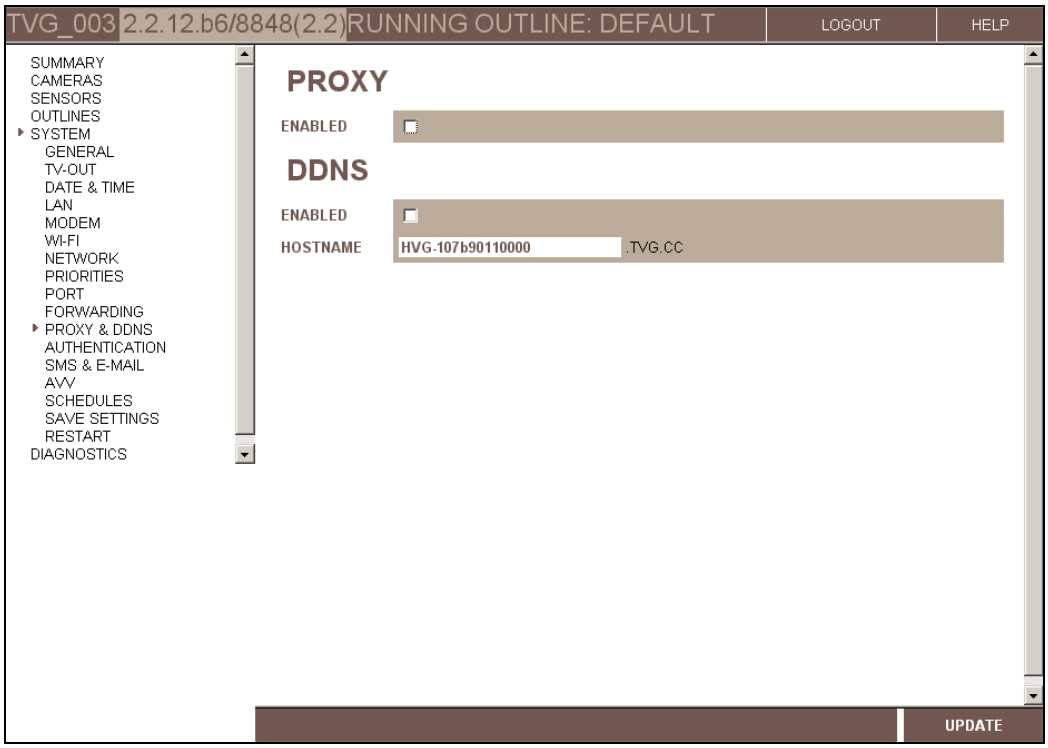


Figure 67: Proxy and DDNS Settings screen

2. If you are using a proxy for remote access, under **Proxy**, select **Enabled**. The fields required to configure the proxy settings are added to the screen.

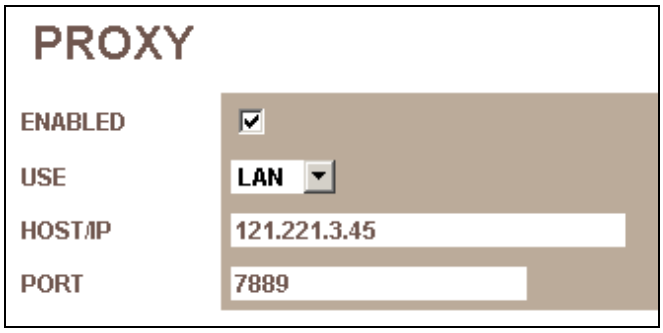


Figure 68: Proxy settings

Fill in the fields as follows:

Field	Description
Use	Select the network connection to use to connect to the proxy server: • Any: The unit can use any available network connection; it will connect using the highest priority connection available (as defined under **Network Priorities**; see *Network Priorities*, page 73). • LAN: The unit should only use a LAN connection. If none is available, the unit will not connect to the proxy server. • WiFi: The unit should only use a WiFi connection. If none is

Field	Description
	available, the unit will not connect to the proxy server. • Modem: The unit should only use a Modem connection. If none is available, the unit will not connect to the proxy server.
Host/IP	Fill in the IP address or hostname of the proxy server.
Port	Fill in the access port of the proxy server.

Note: For full details on using this option, consult your vendor.

3. If you are using a DDNS service, under **DDNS**, select **Enabled**. The fields required to configure the DDNS settings are added to the screen.

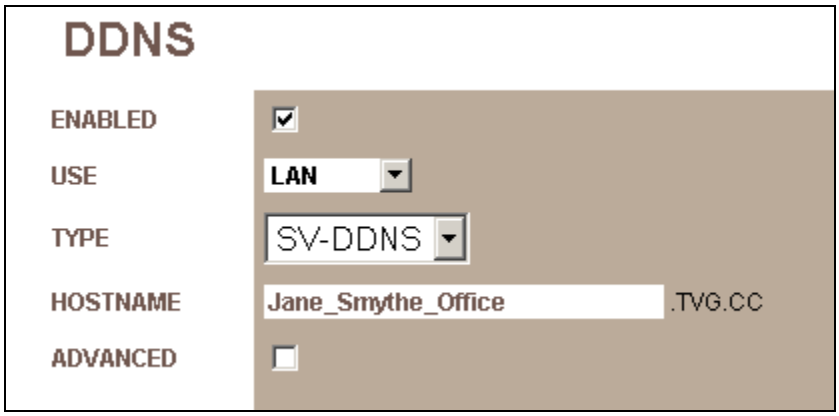


Figure 69: DDNS settings

Fill in the fields as follows:

Field	Description
Use	Select the network connection to use to connect to the DDNS service: • Any: The unit can use any available network connection; it will connect using the highest priority connection available (as defined under **Network Priorities**; see *Network Priorities*, page 73). • LAN: The unit should only use a LAN connection. If none is available, the unit will not connect to the DDNS service. • WiFi: The unit should only use a WiFi connection. If none is available, the unit will not connect to the DDNS service. • Modem: The unit should only use a Modem connection. If none is available, the unit will not connect to the DDNS service.
Type	Select the type of DDNS service. Note: If you select *No-IP* or *DynDNS*, the **Username**, **Password**, and **Confirm Password** fields are added to the screen, and the **Advanced** field is removed from the screen.

Field	Description
Hostname	Fill in the hostname of the DDNS server. If you are using either *No-IP* or *DynDNS*, these values should have been supplied to you when you set up your account. If you are using the SerVision *SV-DDNS* service, the default hostname is the MVG 400's default system name. You can modify this name as you wish. The name you choose should not include any spaces. In addition, you should make sure the name is unique. For example, include your name or the name of your company in the hostname. The complete hostname on the SerVision SV-DDNS server will be composed of the name you type plus **`.TVG.CC`**. For example, if you type "Jane_Smythe_Office," the hostname on the server is **`Jane_Smythe_Office.TVG.CC`**. Note: Once DDNS is set up, changes to the server name will have no effect on the DDNS settings.

4. If you are using either the *No-IP* or the *DynDNS* DDNS service, fill in the **Username** and **Password** fields. The username and password should have been supplied to you by *No-IP* or *DynDNS* when you set up your account there. Under **Confirm Password**, type the password a second time to ensure you typed it correctly.

   Note: SerVision cannot provide support for problems related to the *No-IP* or *DynDNS* DDNS services. For technical support, please contact the service providers.

5. If you are using the *SV-DDNS* service and you want to change the address of the DDNS server, select **Advanced**. The fields required to specify the server are added to the screen.

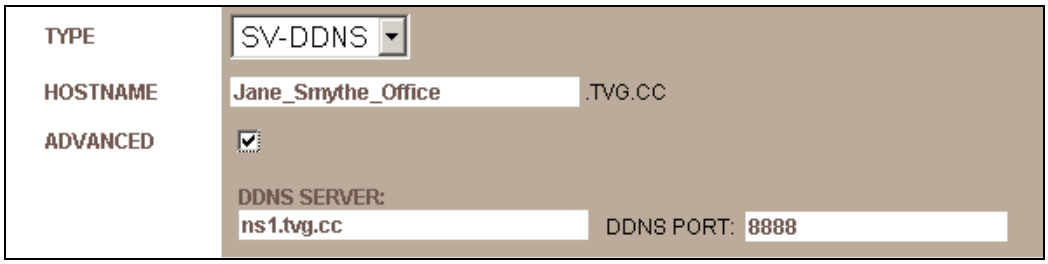


Figure 70: Advanced SV-DDNS settings

Fill in the fields as follows:

Field	Description
DDNS Server	Fill in the IP address or hostname of the SV-DDNS server.
DDNS Port	Fill in the access port of the SV-DDNS server.

6. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Authentication

Access to the configuration utility itself is controlled by username-password authentication. By default, the username is **svuser** and the password is **servconf**. It is recommended that you change these values.

Client access to the unit – via PC, PDA, or cellular telephone – for video viewing and downloading, device control, etc., is also controlled by username-password authentication. By default, the authentication is "anonymous." This means that the username is **anonymous** and the password is **guest**. It is recommended that you personalize these values as well.

➪ *To modify usernames and passwords:*

1. In the **Main Menu**, under **System**, click **Authentication**. The **Authentication** screen opens:

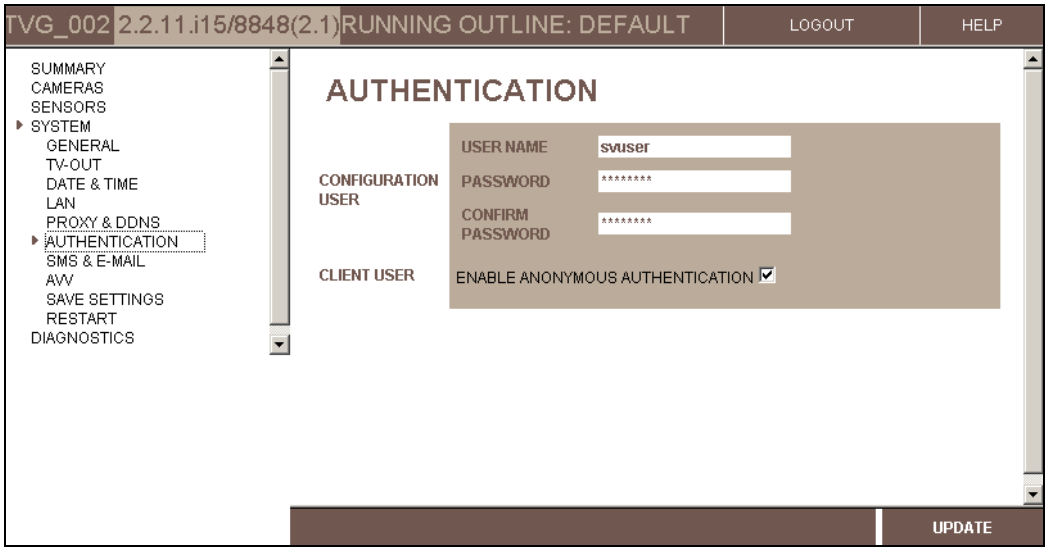


Figure 71: Authentication screen

2. To modify the username and password for access to the configuration utility, under **Configuration User**, modify the **Username** and **Password** fields as desired. Under **Confirm Password**, type the password a second time to ensure you typed it correctly.

3. To modify the username and password for client access to the MVG 400 unit, under **Client User**, clear the **Enable Anonymous Authentication** checkbox. The fields required to set the username and password are added to the screen.

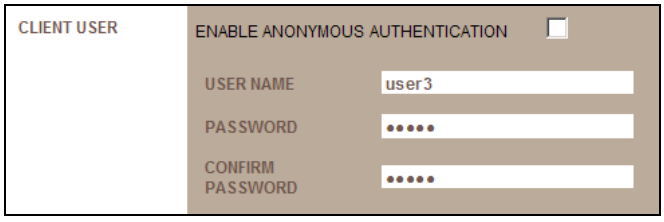


Figure 72: Client user authentication

Modify the **Username** and **Password** fields as desired. Under **Confirm Password**, type the password a second time to ensure you typed it correctly.

Note: If the **Enable Anonymous Authentication** checkbox is selected, the username is **`anonymous`** and the password is **`guest`**.

4. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

SMS and E-mail Notifications

You can choose to send an SMS or an e-mail to a predefined list of people whenever events of specified types are detected.

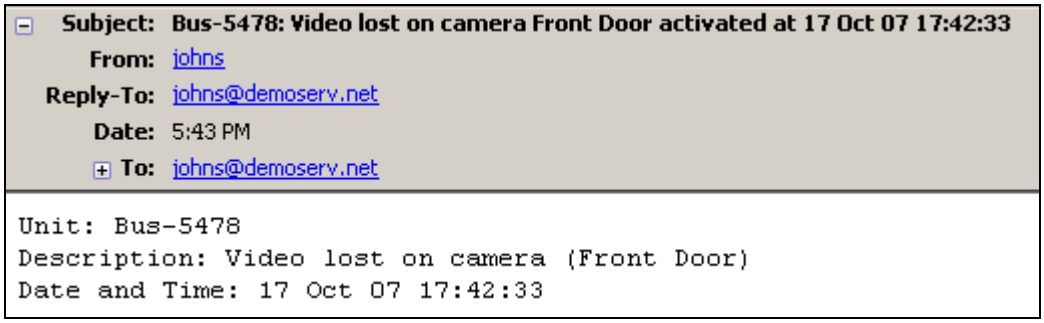

Subject: Bus-5478: Video lost on camera Front Door activated at 17 Oct 07 17:42:33
From: johns
Reply-To: johns@demoserv.net
Date: 5:43 PM
To: johns@demoserv.net
Unit: Bus-5478
Description: Video lost on camera (Front Door)
Date and Time: 17 Oct 07 17:42:33

Figure 73: E-mail notification

In order to use the SMS functionality, you must set up an account with Clickatell (http://www.clickatell.com).

In order to send e-mails, you must have a valid SMTP e-mail account that can be used as the "sender" of the e-mail messages.

NOTE: Web-based e-mail does not always support SMTP settings.

The MVG 400 sends out e-mail notifications with standard messages that contain the following information:

- Name of the MVG 400 unit
- Name of the device that triggered the event
- Type of the event
- Date and time of the event

Depending on the notification settings of each device, e-mail notifications may sometimes include snapshots of the first frame of an event. If VGA recording is activated (see *Advanced Recorder Settings*, page 112), you can choose whether images sent with e-mail notifications are sent as standard-sized SIF images, or large VGA images. If AVV is activated (see *Automatically Uploading Video to an AVV Server*, page 87), an image and a link to the uploaded video are always included.

You can specify the text of SMS messages that are sent by defining a *message template*. The template can contain any text you wish. It can also contain variables that will be replaced by the system with relevant values in the actual message. For example, the message can include the name of the recipient, the time, and the name of the device that triggered the event. For additional information, see *SMS Message Templates*, page 85.

Once you have configured the notification settings, you can test them by sending a sample notification. For additional information, see *Testing Notification Settings*, page 86.

This section explains how to configure the settings that make it possible for the system to send notifications. Messages are only sent if the device triggering an event – a camera, sensor, or activator – is configured to send notifications of events. For information on configuring a device to send notifications of events, see the sections about configuring that type of device:

- *Video Motion Detection (VMD)*, page 101
- *Configuring Video Lost*, page 108
- *Sensor and Activator Settings*, page 115

⇨ *To configure SMS and e-mail notification settings:*

1. In the **Main Menu**, under **System**, click **SMS & E-mail**. The **SMS and E-mail** screen opens:

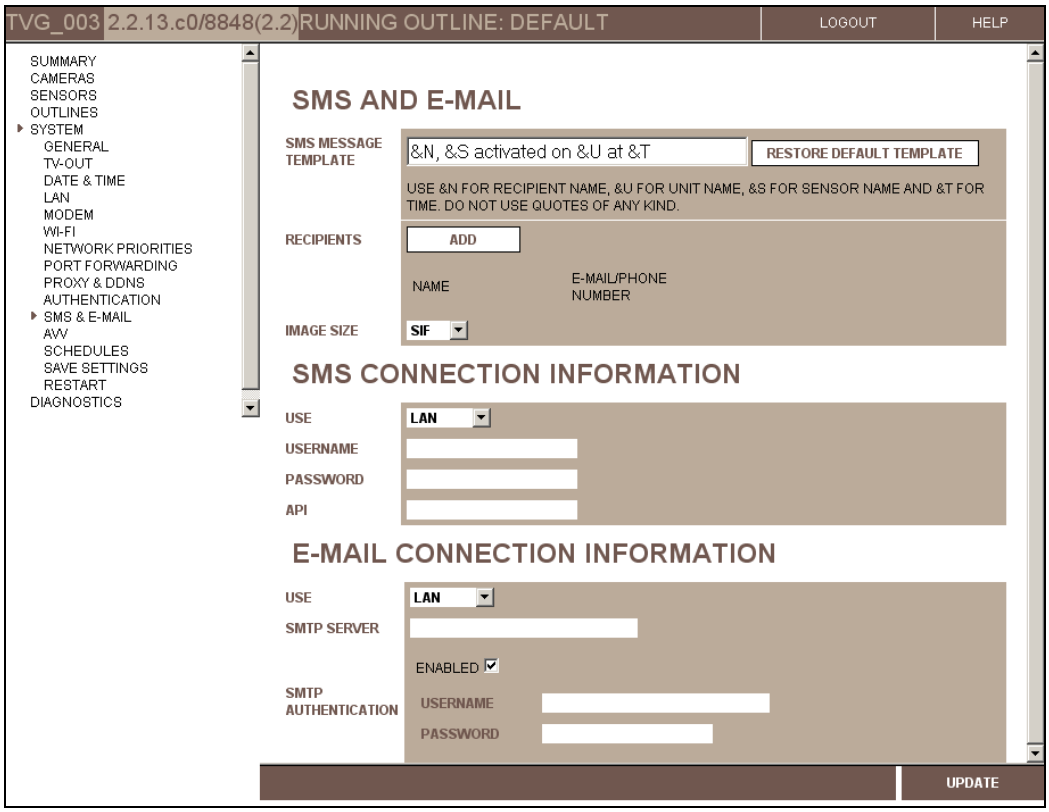


Figure 74: SMS and E-mail screen

2. Under **Message Template**, modify the text of the message that should be sent to the SMS recipients on the list, as necessary. The message can contain up to 45 characters, including spaces. It should not include quotation marks of any kind (", ', or `).

> **NOTE:** The message text can contain variables that are replaced by the system with relevant values in the actual message. For example, the message can include the name of the device that triggered the event. For additional information, see *SMS Message* Templates, page 85.

The default message includes the recipient's name, the name of the MVG 400 unit, the name of the device that triggered the event, and the time at which the event was triggered. If the message has been changed from its default version, and you want to replace the current message text with the default text, click **Restore Default Template**.

3. For each recipient of an SMS or e-mail message, under **Recipients**, click **Add**. A row is added to the list of recipients.

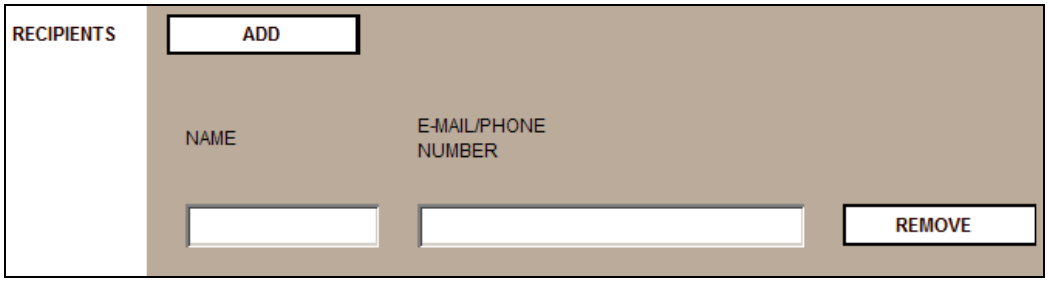


Figure 75: New recipient row

Fill in the fields as follows:

Field	Description
Name	The name of the person who will receive an SMS or e-mail message when an event occurs (up to 20 characters).
E-mail / Phone number	Fill in the phone number or e-mail address of the recipient. **SMS:** Enter the phone number in the international format, with no spaces. The number is made up of the country code, the area code and the phone number. Example: For the US phone number 212-555-1212, enter +12125551212. **E-mail:** Enter the e-mail address. Example: johns@demoserv.net

Note: To send both an SMS and an e-mail to the same person, list the person twice in the list of recipients; fill in the SMS phone number in one of the listings, and the e-mail address in the other listing.

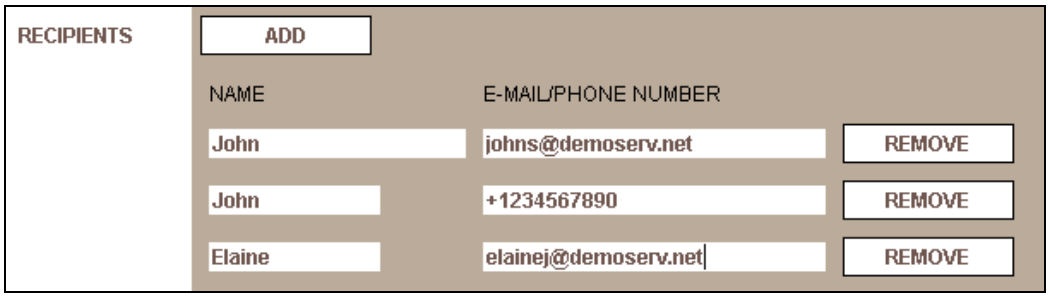


Figure 76: Recipients list

4. Under **Image Size**, select the size of the JPEG image that will be attached to e-mail notifications that contain images (SIF or VGA).

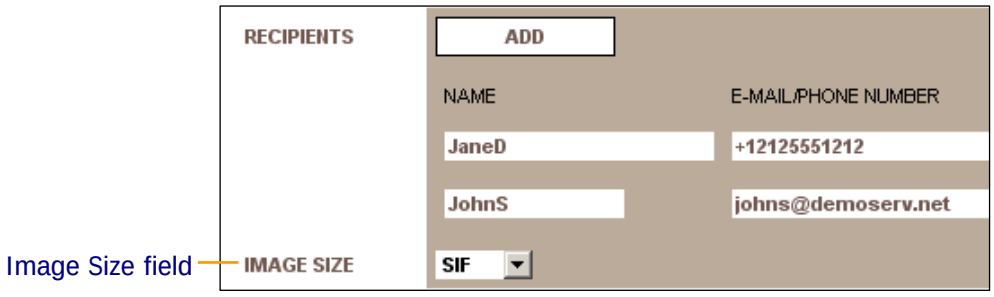


Figure 77: Image Size field

5. If you want to send SMS notifications, under **SMS Connection Information**, fill in the fields as follows:

Field	Description
Use	Select the network connection to use to connect to send the SMS: • Any: The unit can use any available network connection; it will connect using the highest priority connection available (as defined under **Network Priorities**; see *Network Priorities*, page 73). • LAN: The unit should only use a LAN connection. If none is available, the unit will not send the SMS. • WiFi: The unit should only use a WiFi connection. If none is available, the unit will not send the SMS. • Modem: The unit should only use a Modem connection. If none is available, the unit will not send the SMS.
Username	Fill in the username of your Clickatell account.
Password	Fill in the password of your Clickatell account.
API	Fill in the API ID of your Clickatell account.

Note: If you do not have an active Clickatell account, open one at http://www.clickatell.com.

Note: SerVision cannot provide support for problems related to the Clickatell service. For technical support, please contact Clickatell.

6. If you want to send e-mail notifications, under **E-mail Connection Information**, fill in the fields as follows:

Field	Description
Use	Select the network connection to use to connect to send the e-mail message: • Any: The unit can use any available network connection; it will connect using the highest priority connection available (as defined under **Network Priorities**; see *Network Priorities*, page 73). • LAN: The unit should only use a LAN connection. If none is available, the unit will not send the e-mail. • WiFi: The unit should only use a WiFi connection. If none is available, the unit will not send the e-mail. • Modem: The unit should only use a Modem connection. If none is available, the unit will not send the e-mail.
SMTP Server	Fill in the SMTP server of your e-mail account as they appear in your e-mail software configuration.
SMTP Authentication	If the SMTP server requires authentication, select **Enabled**. The **Username** and **Password** fields are added to the screen.
Username	Fill in the username of your e-mail account as it appears in your e-mail software configuration. Note: This field only appears if SMTP Authentication is enabled.
Password	Fill in the password of your e-mail account as it appears in your e-mail software configuration. Note: This field only appears if SMTP Authentication is enabled.

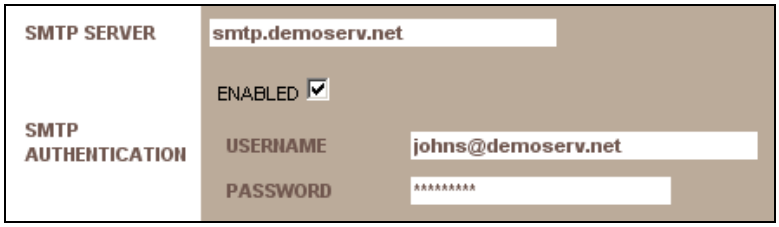


Figure 78: SMTP server and authentication settings

Note: Internet mail accounts (e.g., Yahoo or MSN) are not supported. A list of free SMTP servers can be found at http://www.e-eeasy.com/SMTPServerList.aspx.

7. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

SMS Message Templates

The following codes can be included in SMS message templates:

Code	Description	Example
&N	The recipient's name	Johns
&S	The name of the sensor or VMD that triggered the event	Front Door
&U	The name of the MVG 400 unit	Bus-5478
&T	The time of the event	22 Feb 07 00:17:16

The default message template is:

&N, &S activated on &U at &T

If the *Front Door* sensor is triggered, John will receive the following SMS message from the MVG 400:

Johns, Sensor (Front Door) ON activated on Bus-5478 at 22 Feb 07 00:17:16

The recipient name is set in each message to match the name of the recipient as it appears in the **Recipient** list below the message template.

You can modify the default message to suit your requirements. For example, you could enter the following message:

An event was detected: &S at &T

In this case, when the *Front Door* sensor is triggered, all the SMS recipients in the list will receive the following message from the MVG 400:

An event was detected: Sensor (Front Door) ON at 22 Feb 07 00:17:16

Testing Notification Settings

Once the event notification settings are configured, and the settings have been implemented on the unit (i.e., the settings were saved and the unit was reset), you can test the SMS and e-mail settings to ensure that the notifications are sent to the recipients you intended.

⇨ *To send a test message to the notification recipients:*

- In the **System Summary** screen, under **SMS & E-mail**, click the **Test E-mail** button or the **Test SMS** button. A sample message is sent to all of the recipients of the specified type of notification.

  Note: If no recipients are defined for one of the types of notifications, the test button for that type of notification does not appear.

  Note: Test messages are sent based on the notification configuration settings that are currently defined on the MVG 400 unit. If you make changes to the configuration, but have not yet saved them on the unit and reset the unit, they will not be reflected in the test notifications that are sent.

Automatically Uploading Video to an AVV Server

You can configure the system to automatically upload recorded video of events from the MVG 400 unit to an AVV web server. Once the video has been uploaded, you can access the server via the internet to view the video. This feature is called *Alarm Video Verification* (AVV).

If e-mail connection information is configured (see *SMS and E-mail Notifications*, page 81), e-mail notifications are sent to the specified recipients when the system begins uploading video to the AVV server and when the system successfully completes the upload. The initial e-mail notification includes a picture of the first recorded frame of the event and a link to the relevant video on the AVV server. The second e-mail is a text message that also includes a link to the video on the AVV server. To access the video, you need only click the link in one of the e-mails. You can also access the video on the AVV server by navigating to the download site.

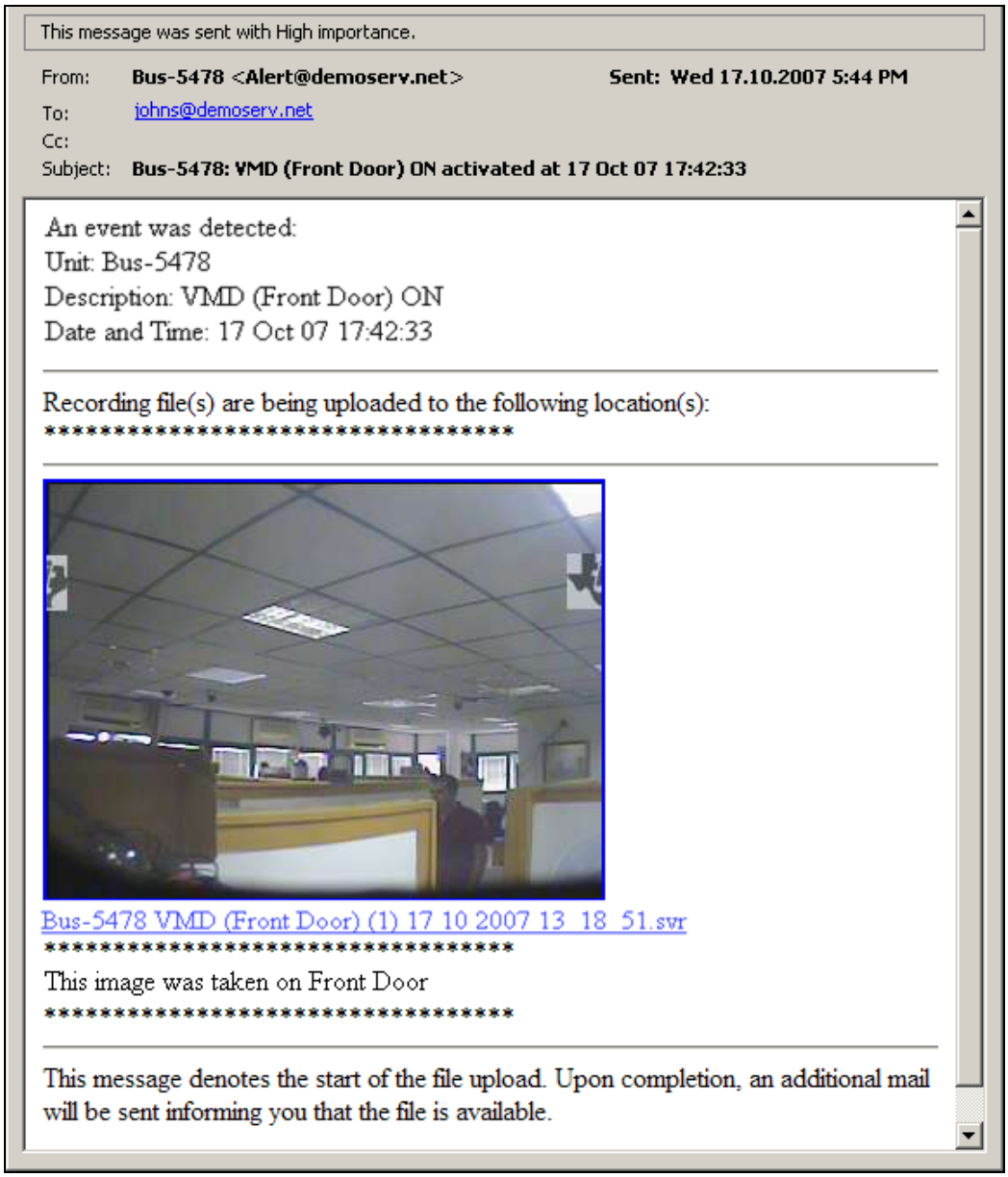

This message was sent with High importance.
From: Bus-5478 <Alert@demoserv.net> Sent: Wed 17.10.2007 5:44 PM
To: johns@demoserv.net
Cc:
Subject: Bus-5478: VMD (Front Door) ON activated at 17 Oct 07 17:42:33
An event was detected:
Unit: Bus-5478
Description: VMD (Front Door) ON
Date and Time: 17 Oct 07 17:42:33
Recording file(s) are being uploaded to the following location(s):
****
Bus-5478 VMD (Front Door) (1) 17 10 2007 13_18_51.svr
****
This image was taken on Front Door
****
This message denotes the start of the file upload. Upon completion, an additional mail will be sent informing you that the file is available.

Figure 79: AVV notification e-mail – start of upload

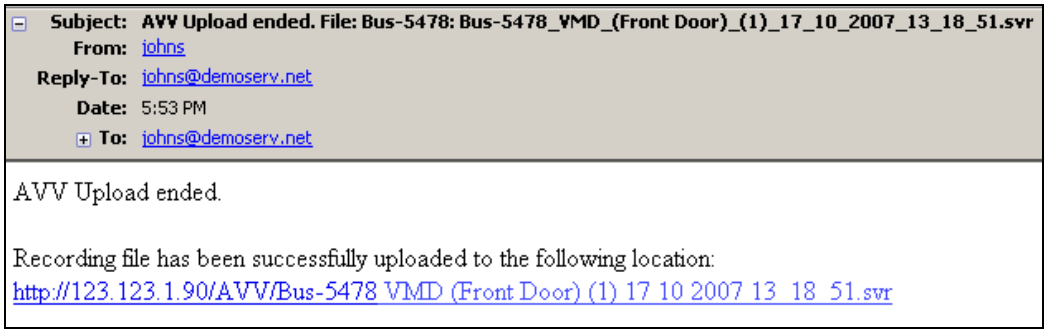

Subject: AVV Upload ended. File: Bus-5478: Bus-5478_VMD_(Front Door)_(1)_17_10_2007_13_18_51.svr
From: johns
Reply-To: johns@demoserv.net
Date: 5:53 PM
To: johns@demoserv.net
AVV Upload ended.
Recording file has been successfully uploaded to the following location:
http://123.123.1.90/AVV/Bus-5478 VMD (Front Door) (1) 17 10 2007 13_18_51.svr

Figure 80: AVV notification e-mail – upload completed

Both video files and e-mail notifications are sent by the MVG 400 using the highest-priority network connection available. (For information about prioritizing network connections, see *Network Priorities*, page 73.)

This section explains how to configure the settings that make it possible for the system to upload video to an AVV server. Video is only actually uploaded if AVV is activated in the configuration of the device triggering an event – a camera, sensor, or activator. For information on configuring a device to trigger automatic uploading of events to an AVV server, see the sections about configuring that type of device:

- *Video Motion Detection (VMD)*, page 101
- *Configuring Video Lost*, page 108
- *Sensor and Activator Settings*, page 115

NOTE: A list of devices that are configured to trigger AVV is displayed at the top of the AVV screen.

➪ *To configure the settings of the AVV server:*

1. In the **Main Menu**, under **System**, click **AVV**. The **Alarm Video Verifications** screen opens:

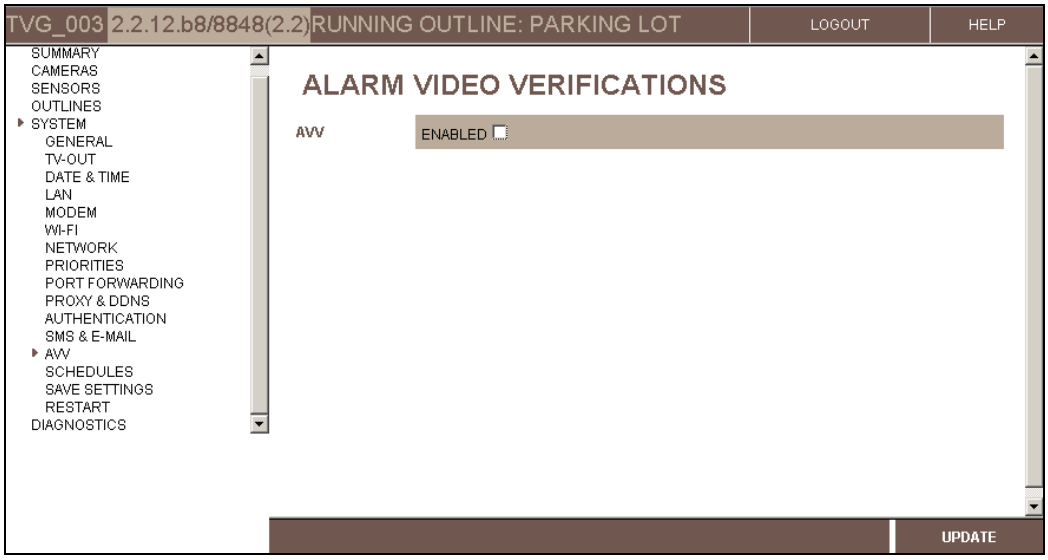


Figure 81: Alarm Video Verifications screen

2. Under **AVV**, select **Enabled**. The fields required to configure the AVV settings are added to the screen.

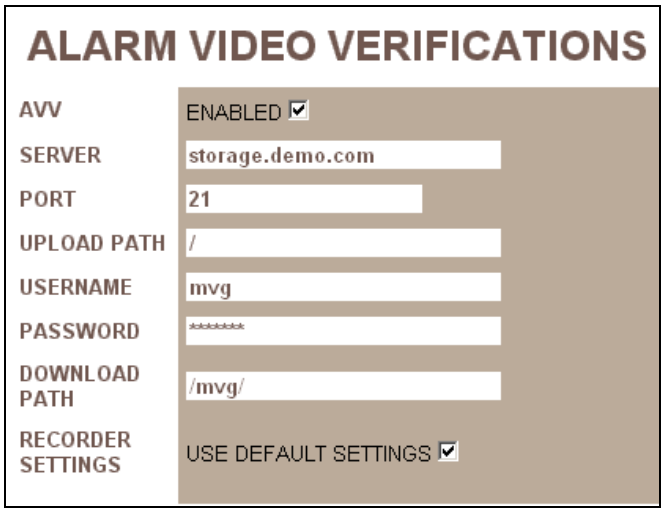


Figure 82: AVV screen expanded

3. Fill in the fields as follows:

Field	Description
Server	Fill in the IP address or hostname of the AVV server.
Port	Fill in the port used for ftp connections to the AVV server (usually 21).
Upload Path	Fill in the path of the ftp directory on the AVV server. The MVG 400 will upload the video files to this directory.
Username	Fill in the username required to access the ftp directory on the AVV server.
Password	Fill in the password required to access the ftp directory on the AVV server.
Download Path	Fill in the path of the http directory on the AVV server. You will download the video files to your PC from this directory.

4. Under **Recorder Settings**, do one of the following:

   - If you want to use the same recorder quality settings for the downloaded video that are used for recorded video that is stored on the MVG 400, select **Use Default Settings**. Then skip to step 6.
   - If you want to select different recorder quality settings, clear the **Use Default Settings** checkbox. The fields required to configure the recorder settings are added to the screen.

Figure 83: AVV custom recorder settings

Note: Default recorder settings are set in the **Camera** screen. For additional information, see *Video Recording Settings*, page 110; *Advanced Recorder Settings*, page 112.

5. Fill in the fields as follows:

Field	Description
Maximum Size	Select the desired frame size for the downloaded video, as follows: • QSIF: Small frame (160x120 pixels) • SIF: Medium-sized frame (320x240 pixels) • VGA: Large frame (640x480 pixels) Note: VGA is available only if VGA recording is activated for one or more of the cameras connected to the MVG 400. (See *Advanced Recorder Settings*, page 112.) Note: If you select a frame size that is larger than the frame size of the default recording setting of a camera, the default setting is used and the value you specify is not implemented. For example, if VGA is selected here, and recording for the camera is in SIF, the uploaded video will be in SIF. Note: This setting only affects the resolution of the video uploaded to the AVV server; it does not affect the size of the image attached to the e-mail notification.
FPS	Fill in the required frames per second for the recordings. Note: If you specify an fps value that is larger than the fps value of the default recording setting of a camera, the default setting is used and the value you specify is not implemented.
KBPS	Fill in the required kilobits per second for the recordings. Note: If you specify a kbps value that is larger than the kbps value of the default recording setting of a camera, all of the default quality settings are used and the values you specify for maximum size, fps, and kbps are not implemented.

6. Click **Update**, and then save the settings. The AVV option is added to the camera, sensor, and activator screens. The changes will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Note: You can now configure devices to act as triggers for AVV. A list of devices that are configured to trigger AVV is displayed at the top of the AVV screen.

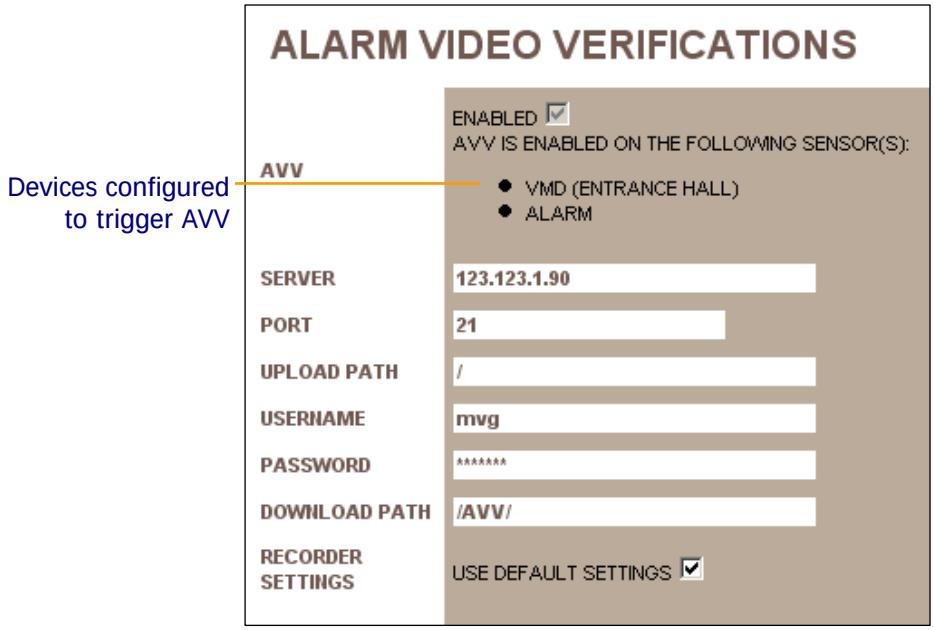


Figure 84: List of devices configured to trigger AVV

Viewing the List of Files on the AVV Server

You can view a list of the files on the AVV server by navigating to the http directory on the server. The name of each file indicates the device that detected the event, and the date and start-time of the event. For example:
`Office_Security_VMD_(Back_Door)(2)_09_07_2007_20_43_51.svr`

⇨ *To view a list of the video files on the AVV server:*

1. In the **Address** field of a browser, fill in the download address of the video. For example, if your AVV server name is `storage.servdemo.net`, and the download path is `/demo`, enter
   `http://storage.servdemo.net/demo/`

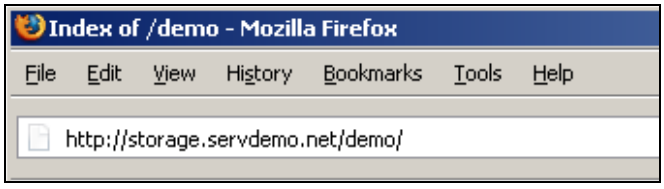


Figure 85: Address of download site

2. Press **Enter**. If the download directory requires authentication, a dialog box opens, requesting the user name and password.

3. Fill in the user name and password, as required, and then click **OK**. A list of the files stored in the download directory appears in the browser window.

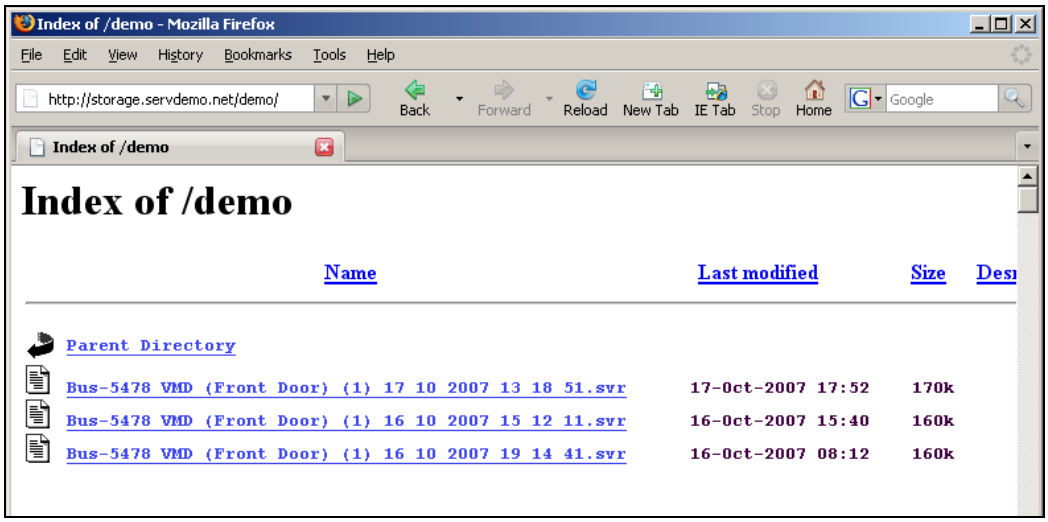

Index of /demo - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://storage.servdemo.net/demo/
Back Forward Reload New Tab IE Tab Stop Home
Google
Index of /demo
Index of /demo
Name
Last modified
Size
Parent Directory
Bus-5478 VMD (Front Door) (1) 17 10 2007 13 18 51.svr 17-Oct-2007 17:52 170k
Bus-5478 VMD (Front Door) (1) 16 10 2007 15 12 11.svr 16-Oct-2007 15:40 160k
Bus-5478 VMD (Front Door) (1) 16 10 2007 19 14 41.svr 16-Oct-2007 08:12 160k

Figure 86: List of files in the download directory

Viewing Video from the AVV server

To view the video that is stored on the AVV server, you download the video to a PC and then play it in the MultiClient.

➪ *To download and view a video file from the AVV server:*

1. If you received an e-mail notification of the event, click either the image or the link in the e-mail.

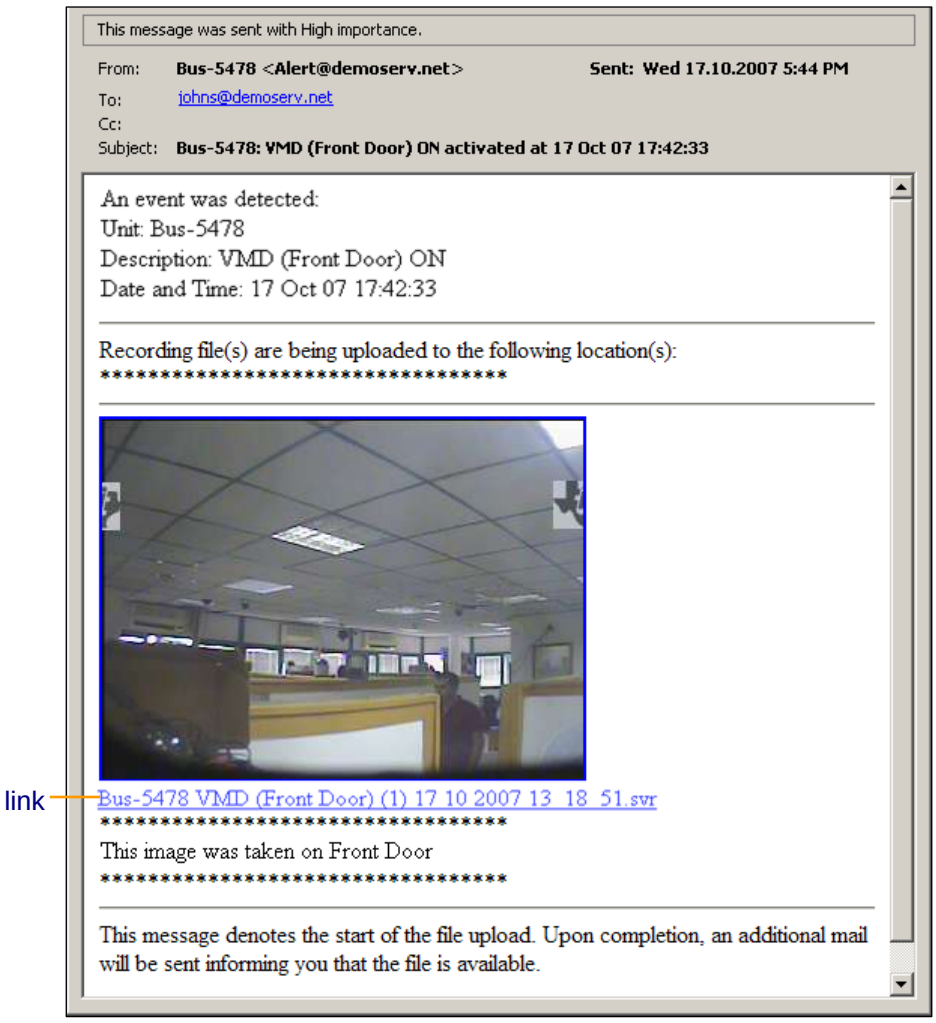
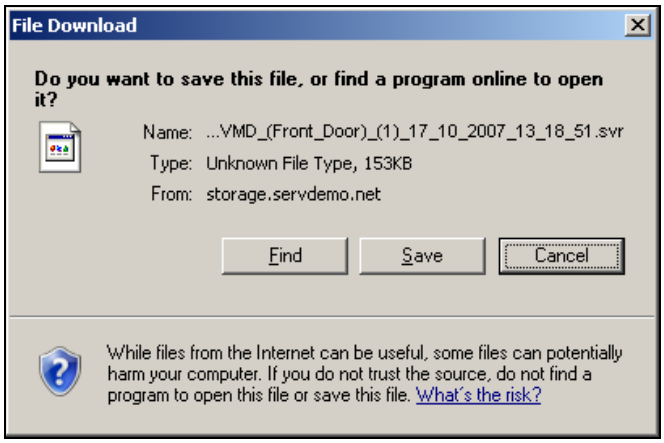

This message was sent with High importance.
From: Bus-5478 <Alert@demoserv.net> Sent: Wed 17.10.2007 5:44 PM
To: johns@demoserv.net
Cc:
Subject: Bus-5478: VMD (Front Door) ON activated at 17 Oct 07 17:42:33
An event was detected:
Unit: Bus-5478
Description: VMD (Front Door) ON
Date and Time: 17 Oct 07 17:42:33
Recording file(s) are being uploaded to the following location(s):
****
link
Bus-5478 VMD (Front Door) (1) 17 10 2007 13_18_51.svr
****
This image was taken on Front Door
****
This message denotes the start of the file upload. Upon completion, an additional mail will be sent informing you that the file is available.

Figure 87: E-mail notification with video link

Otherwise, navigate to the download site though the browser as described above, and click the required file in the list.

If the site requires authentication, a dialog box opens, requesting the user name and password.

2. Fill in the user name and password, as required, and then click **OK**. A dialog box opens, and asks what to do with the video file.


File Download
Do you want to save this file, or find a program online to open it?
Name: ...VMD_(Front_Door)_(1)_17_10_2007_13_18_51.svr
Type: Unknown File Type, 153KB
From: storage.servdemo.net
Find
Save
Cancel
While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not find a program to open this file or save this file. What's the risk?

3. Select **Save**. A file selector dialog box opens.
4. Navigate to the location on your PC in which you want to save the video clip file, and then click **Save**. The file is saved in the selected location.
5. Open the MultiClient.
6. Play the video clip file in the MultiClient in one of the following ways:
   - Drag the downloaded file to a camera pane in the MultiClient.
   - In the **Tools** menu, select **Play Downloaded Video**. Navigate to the file, select it, and then click in a camera pane.

   The video clip is played in the camera pane.

   Note: For additional information about playing video files in the MultiClient, please refer to the relevant user guide.

Disabling AVV

Once AVV uploading has been enabled, you can disable it as follows:

⇨ *To disable AVV uploading:*

1. Ensure AVV is disabled for all cameras and sensors connected to the MVG 400 unit.

   Note: To do this, check the VMD and video lost settings of each camera (see pages 101 and 108) and the settings of all the sensors and activators (see page 115).

2. In the **Main Menu**, under **System**, click **AVV**. The **Alarm Video Verifications** screen opens.
3. Under **AVV**, clear the **Enabled** checkbox. The fields used to configure the AVV settings are removed from the screen.

   Note: This checkbox is disabled if AVV is enabled in any VMD or video lost settings, or in the settings of any sensor or activator.

4. Click **Update**, and then save the settings. The AVV option is removed from the camera, sensor, and activator screens. The changes will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Camera Settings

The **Camera** screens are used to configure the cameras connected to the MVG 400 unit. Settings include the name of the camera, the desired brightness and contrast, the video format, pan-tilt-zoom (PTZ) settings, video-motion-detection (VMD) settings, video-lost settings, and recording settings.

About Brightness and Contrast Settings

Brightness and contrast settings affect the camera and not just the display in the client interface. The settings defined in the **Camera** screens are the default settings for video streams from the specified camera. When the video stream is displayed in the client, these settings can be modified. This makes it possible for you to fine-tune the settings while you are viewing the stream.

Modifications that are implemented in the client affect all live and recorded video from the relevant camera until the MVG 400 unit is reset. To implement them permanently, they must be saved in the unit's configuration. To save settings that are modified in a client application, you must log into the configuration utility and update the settings there, as described below.

NOTE: Changes to brightness and contrast settings affect the camera directly, and are thus reflected in all displays of live video from that camera from the time they are implemented. (Similarly, video that is recorded from the camera after the changes are implemented is also affected.) The brightness and contrast settings that are optimal for a particular monitor may not display as well on other monitors or screens. Therefore, care should be taken when changes are made, and, furthermore, it may not be advisable to save the modified settings on the unit in every case.

Configuring Video Cameras

The **Camera Summary** screen summarizes the current settings of each camera in the system, and provides links to the camera configuration screens, in which the camera settings can be modified.

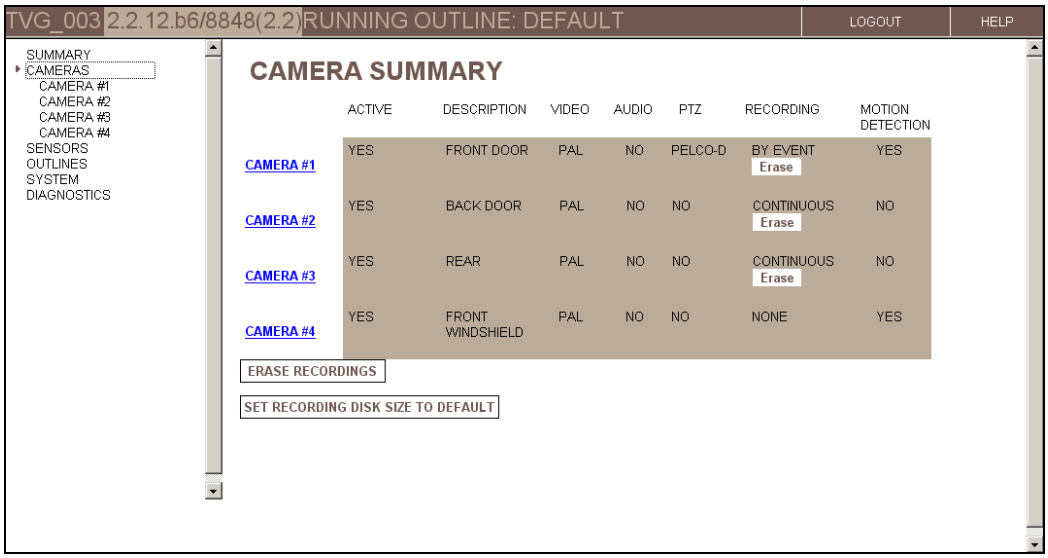


Figure 88: Camera Summary screen

Each camera in the system has its own configuration screen. The camera plugged into Video Input 1 is called “Camera 1,” and is configured in the **Camera 1** configuration screen, and the camera plugged into Video Input 2 is called “Camera 2,” and is configured in the **Camera 2** configuration screen. The camera configuration screens are accessed from the **Camera Summary** screen.

➪ *To open the Camera Summary screen:*

- In the **Main Menu**, click **Cameras**.

➪ *To configure a camera:*

1. In the **Main Menu**, under **Cameras**, click the camera (e.g., **Camera 1** to configure the camera plugged into Video Input 1). The relevant **Camera** configuration screen opens:

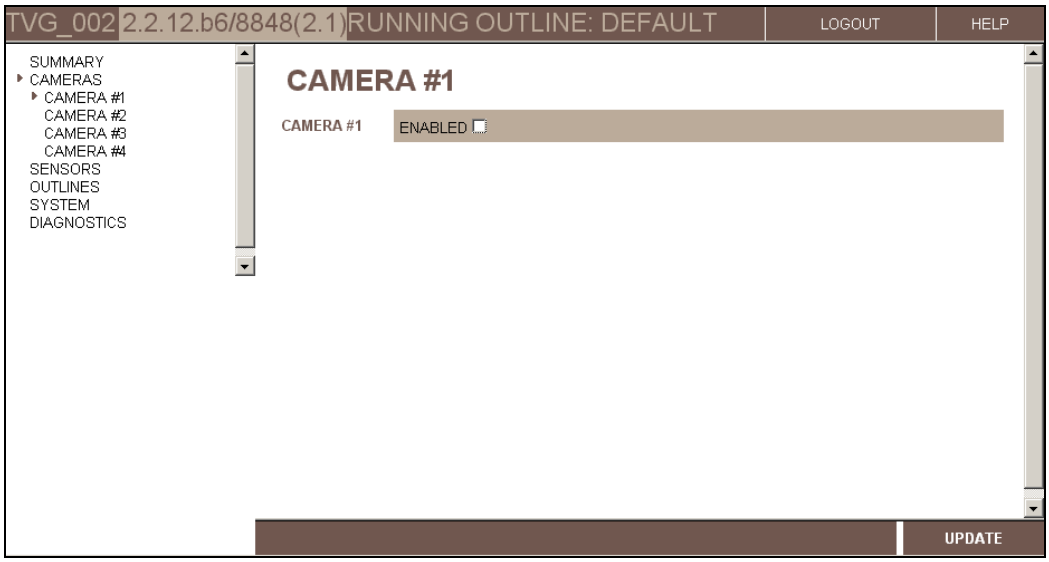


Figure 89: Camera configuration screen

2. Select the **Enabled** checkbox. The fields required to configure the camera settings are added to the screen.

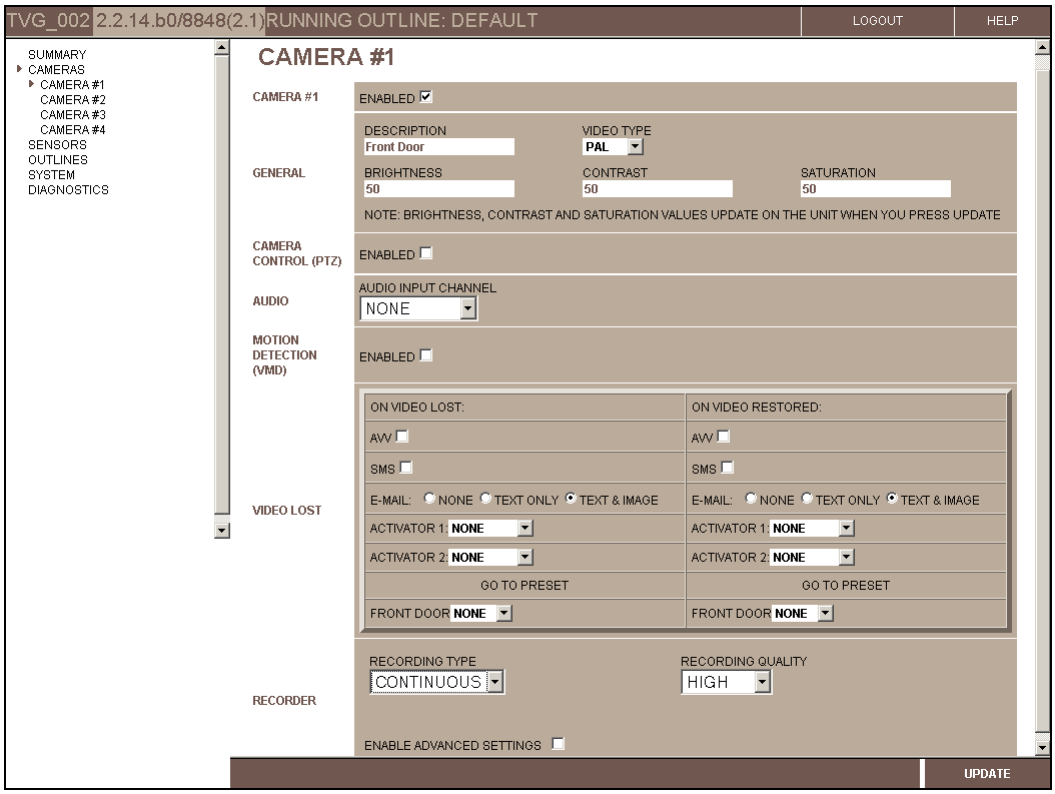


Figure 90: Camera enabled

Note: If **Enabled** is not selected, the camera cannot record and will not appear in client applications.

3. Fill in the fields as follows:

Field	Description
Description	Type a name for the camera (up to 20 characters). Each of the cameras must have a different name. The camera names are used to identify the camera in client applications. Note: If the MVG 400 will be working in conjunction with an SVBackup server, use only English characters in the name.
Video type	Select the video format (PAL or NTSC). For additional information, consult the camera documentation. Note: If multiple cameras are connected, all must use the same video type. Using some PAL cameras and some NTSC cameras can cause problems with the video.

Field	Description
Brightness	Adjust the default brightness of the camera. Range: 1–100. These values are used when the MVG 400 unit is started. Note: You can also adjust the brightness in the client as you view the video stream (see page 96).
Contrast	Adjust the default contrast of the camera. Range: 1–100. These values are used when the MVG 400 unit is started. Note: You can also adjust the contrast in the client as you view the video stream (see page 96).
Saturation	Adjust the default saturation of the camera. Range: 1–100. Higher the saturation produces more vivid colors.

NOTE: Changes to brightness, contrast, and saturation are implemented immediately when **Update** is clicked.

4. If the camera has PTZ features, and you want to use them to control the camera remotely through a client application, under **Camera Control (PTZ)**, select **Enabled**. Then follow the instructions below (*11. Click* **Update.** Changes to brightness, contrast, and saturation are implemented immediately. Save the settings to implement them permanently; save the settings and restart the unit to implement all other changes (see *Saving Configuration Changes,* page 139).

Configuring PTZ, page 100).

5. Under **Audio**, select one of the following:

   - **None:** Do not link any audio to the video from this camera.
   - **Channel 1:** Link the audio from the microphone connected to **Audio In1** (**Ain1**) to the video from this camera.
   - **Channel 2:** Link the audio from the microphone connected to **Audio In2** (**Ain2**) to the video from this camera.

   If you selected **None**, skip to step 8.

   If you selected either **Channel 1** or **Channel 2**, audio from the selected microphone is available whenever you view *live* video in a client application. In addition, the fields required to configure *recording* of audio with recorded video from this camera are added to the screen, and a message appears indicating that audio recording is enabled. This means that audio from the selected microphone is incorporated with all video recorded from the camera.

Figure 91: Audio recording settings

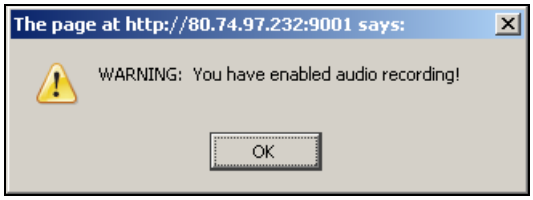


Figure 92: Audio-recording enabled message

6. In the audio-recording enabled message, click **OK**.

7. If you do not want audio from the microphone to be incorporated with the video recorded from the camera, under **Audio Recording**, clear the **Enabled** checkbox.

   Note: The **Audio Quality** field is not currently in use. All audio recordings have medium quality.

8. If you want to use the MVG 400's VMD features to detect and respond to motion in the camera's field of view, under **Motion Detection (VMD)**, select **Enabled**. Then follow the instructions below (*Video Motion Detection (VMD)*, page 101).

   Note: Be aware that on PTZ-controlled cameras each change of the camera position is interpreted by the VMD system as an event.

9. Configure the unit's response to interruptions in the transmission of the video signal from the camera to the unit as described below (*Configuring Video Lost*, page 108).

10. Configure the camera's recorder as described below (*Video Recording Settings*, page 110).

11. Click **Update**. Changes to brightness, contrast, and saturation are implemented immediately. Save the settings to implement them permanently; save the settings and restart the unit to implement all other changes (see *Saving Configuration Changes*, page 139).

Configuring PTZ

This section explains how to configure the pan-tilt-zoom (PTZ) controls of cameras that support these features. Once the controls are configured, the camera can be aimed and zoomed remotely using any of the client applications.

NOTE: For information about connecting the PTZ controller to the MVG 400 unit, see page 16.

⇨ *To configure pan-tilt-zoom controls (PTZ) in cameras that support these features:*

1. In the **Camera** configuration screen, under **Camera Control (PTZ)**, select **Enabled**. The fields required to configure the PTZ settings are added to the screen:

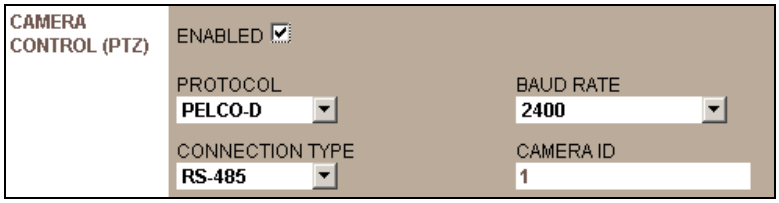


Figure 93: PTZ settings

2. Fill in the fields as follows:

Field	Description
Protocol	Select the communication protocol used by the camera for PTZ control. Note: Consult the camera documentation or the camera vendor for this information.
Baud Rate	Select the baud rate used by the camera for PTZ control. Note: Consult the camera documentation or the camera vendor for this information. Note: The other connection parameters required by the MVG 400 are: *one start bit*, *one stop bit*, *no parity*, and *8-bit*. If the camera uses different parameters, please contact your vendor.
Connection Type	Select the type of connection that is used for the PTZ controls – RS232 or RS485. Note: Consult the camera documentation or the camera vendor for this information. Note: If multiple PTZ cameras that use the RS485 connection type are connected to the MVG 400 unit, they must all use the same protocol.
Camera ID	If the camera is connected using RS485, specify its ID number. Note: This number must correspond to the camera ID that is set on the camera. Consult the camera documentation for information about setting the camera ID. If multiple PTZ cameras using the RS485 connection are connected to the MVG 400 unit, they must have distinct camera IDs.

Video Motion Detection (VMD)

When Video Motion Detection (VMD) is enabled, the MVG 400 automatically checks the field of view (FOV) of the camera for changes. When changes are detected, the MVG 400

triggers a VMD *event*. You can configure the VMD itself, and the event notifications that are generated when VMD events are triggered.

About VMD Regions

The FOV is divided into regions, and the relative sensitivity of the motion detection can vary from region to region. For example, if a computer monitor in the FOV of the camera causes motion detection events to be triggered unnecessarily, you can choose to mark the region of the monitor for low sensitivity, or even no motion detection, while the rest of the FOV would have high sensitivity.

If the camera is connected to the MVG 400, and regions are enabled, the **Camera** configuration screen shows the current FOV of the camera. Regions that are not included in motion detection are not marked. Regions that are included in motion detection are marked with a colored **x**, as follows:

Sensitivity Level	Color
No motion detection	None
Low	Blue
Middle	Green
High	Red

NOTE: If VMD is enabled, but regions are not, middle sensitivity is applied to the entire FOV.

NOTE: If the camera is not connected to the MVG 400, a blank tan image is displayed. It is recommended that you select the regions for inclusion in VMD when you can see an actual image.

About VMD Event Settings

A VMD event starts when motion is first detected and ends when there is no motion. However, in many cases what is seen by the human eye as one event can be interpreted by the unit as a series of motions with idle periods, and the motion event is broken into a series of multiple small ones. On the other hand, a motion event can be exhaustingly long, such as a full day in a busy shop, and we would like to break it down to smaller events.

To solve these two problems, VMD event detection can be configured to control the length of events using the following parameters:

- **Debounce:** The interval between the end of motion as detected by the unit and the time when the event is defined as ending
- **Maximum length:** The maximum length of a single event

Separate events are defined when motion is not detected for a specified debounce interval. For example, if the interval is 15 seconds, event A ends when motion is not detected for 15 seconds, and event B begins if motion is detected again after more than 15 seconds have

elapsed. If less than 15 seconds pass at the end of event A before additional motion is detected, event A is extended to include the additional motion.

Separate events are also defined when the maximum event length is reached. For example, if the maximum length of an event is 30 minutes, new events are generated every 30 minutes even if motion was detected without interruption during the entire period.

Consider, for example, a camera that is set up in a train station. During peak hours, there is usually constant motion. During off hours, lengthy intervals between motion events are common. The debounce interval is 30 seconds, and the maximum event length is 1800 seconds (30 minutes). During peak hours, event-triggered recording generates continuous recording because VMD events are constantly detected. However, the video is divided into 30-minute events, making it easy to check the video to see what happened during a particular time range. During off-peak hours, events are typically much shorter, and recording is not continuous.

About Responses to VMD Events

You can configure the unit to respond to VMD events in any or all of the following ways:

- Upload video of the event to an AVV server on the internet (see *Automatically Uploading Video to an AVV Server*, page 87). If e-mail notification recipients are defined in the **SMS and E-mail** screen, an e-mail message is sent to all the recipients when the VMD event begins and a second e-mail is sent when the video is successfully uploaded and is available for downloading by users. The e-mail notification includes a link to the video file on the server and a picture of the event. (Note that the file transfer starts at the end of the VMD event to ensure that it encompasses the entirety of the event.)
- Send VMD event notifications to the SMS and/or e-mail recipients defined for the system (see *SMS and E-mail Notifications*, page 81). E-mail notifications can optionally include a picture of the event, and, if AVV is activated, a link to video of the event.
- Turn an activator on or off.
- Move any PTZ camera connected to the MVG 400 that supports presets to a preset location.

These actions can be implemented when the event begins, when it ends, or both.

Configuring VMD Settings

⇨ *To configure video motion detection (VMD):*

1. In the **Camera** configuration screen, under **Motion Detection (VMD)**, select **Enabled**. The fields required to configure the VMD settings are added to the screen:

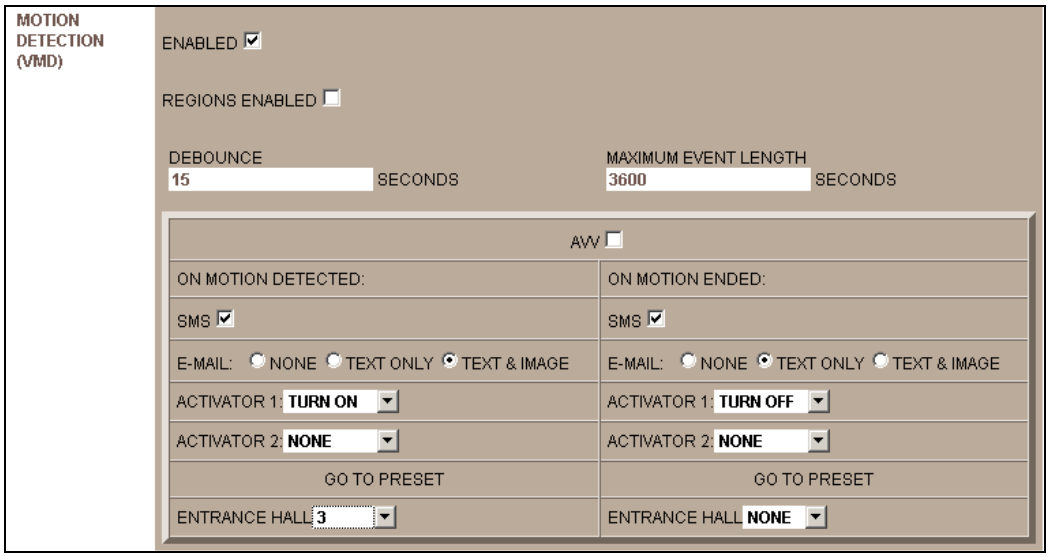


Figure 94: VMD settings

2. If you want to define the level of sensitivity of the motion detection that is implemented in the field of view (FOV), and perhaps specify different levels of sensitivity for different regions of the FOV, under **Regions**, select **Enabled**. Otherwise, skip to step 8.

   The fields required to define sensitivity levels and regions are added to the screen, and, if the camera is connected to the unit, the current FOV is displayed:

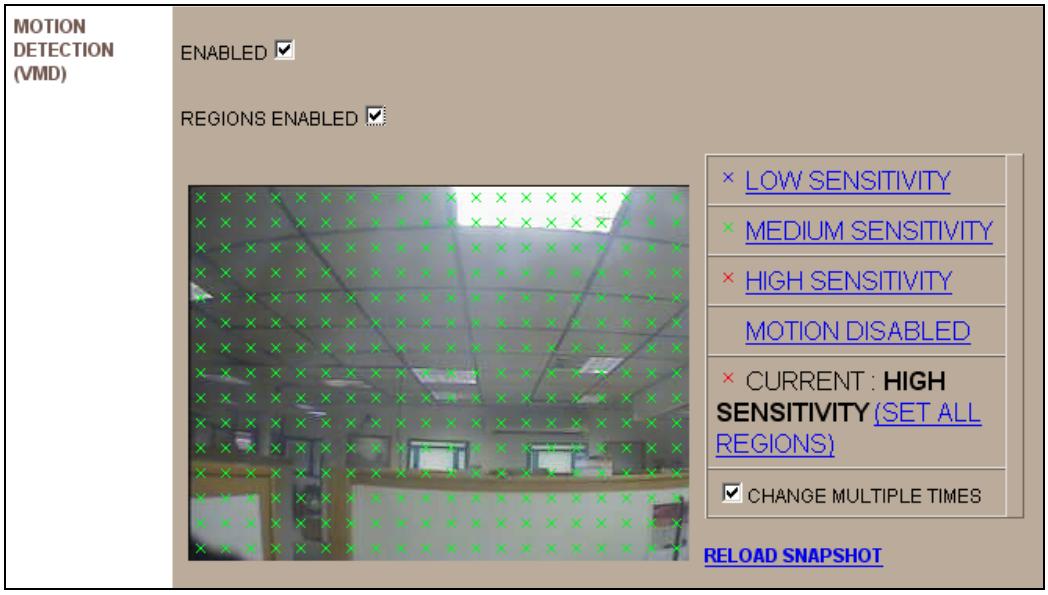


Figure 95: Region sensitivities in the FOV

Note: To update the snapshot of the camera's FOV, click **Reload Snapshot**.

3. Click the sensitivity level you want to apply to a region or regions of the FOV. The selected level appears below the list under CURRENT. For example, in the figure above, HIGH SENSITIVITY is selected.

4. If you want to set the entire FOV to the specified sensitivity level, click the relevant sensitivity level, and then click **Set all regions**. The **x**s marking the entire FOV are colored, or removed, accordingly.

5. If you want to apply the current sensitivity level to a rectangular area of the FOV (containing multiple region markers), do the following:

   - Make sure the **Change Multiple Times** checkbox is *selected*.
   - Click one corner of the rectangular area. A border appears around the region.

Figure 96: FOV with border around selected marker

   - Click the diagonally opposite corner of the rectangular area. The current sensitivity level is applied to the entire rectangle.

Figure 97: Sensitivity level applied to selected rectangle

6. If you want to apply the current sensitivity level to individual regions, do one of the following:

   - With the **Change Multiple Times** checkbox *selected*, double-click the region.
   - With the **Change Multiple Times** checkbox *cleared*, click the region.

An **x** of the color representing the selected sensitivity level appears on the image (or the x is removed from the area, if the current sensitivity level is "Motion Disabled").

7. Repeat steps 3–6 as necessary for each type of sensitivity level you want to apply to a region of the FOV.

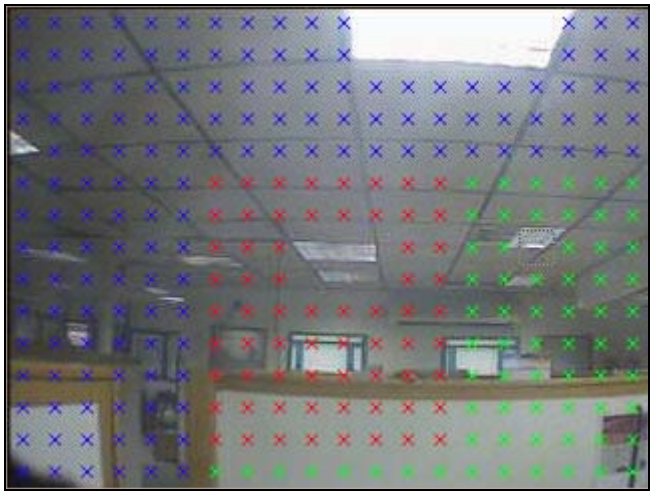


Figure 98: Region sensitivities set

8. Under **Debounce**, specify the minimum interval between events, in seconds. Range: 3–30 seconds. If motion is detected, and then ceases, the motion detection event is only closed if this amount of time has passed without any motion.

   Example: Motion is detected at 3:15:05 and continues until 3:15:45. After this, motion is not detected again until 3:16:10, 25 seconds after it was last detected. If the debounce interval is 15 seconds, two separate VMD events are triggered. If, on the other hand, the debounce interval is 30 seconds, only one VMD event is triggered, beginning at 3:15:05 and continuing past 3:16:10.

   Tip: If a lot of motion is likely to be detected by the camera, it is best to specify a relatively long debounce interval, so that the system does not generate a very long list of short events.

9. Under **Maximum Event Length**, specify the maximum length of a VMD event, in seconds. Range: 60–86400 seconds (1 minute – 1 day). If motion is detected continuously for longer than this period of time, a new event is automatically generated at the end of this interval.

10. Under **On Motion Detected**, select the actions that the MVG 400 should perform if motion is detected, as follows:

Field	Description
AVV	Select this option to have the MVG 400 send video of the event to an AVV server for downloading. The video is uploaded to the site defined in the **AVV** screen, in the format defined there (see *Automatically Uploading Video to an AVV Server*, page 87), and e-mail notifications are sent to all e-mail recipients (see *SMS and E-mail Notifications*,

Field	Description
	page 81). Note: The upload of the video clip begins at the *end* of the motion event. Nevertheless, the first e-mail notification is sent when the event is first detected. Thus, the video clip may not be available yet when you receive this e-mail notification. A second e-mail notification is sent when uploading is completed. Note: This feature only works if recording (either event-triggered or continuous) is activated for the camera (see *Video Recording Settings*, page 110). Note: This option only appears if AVV is activated for the MVG 400 (see *Automatically Uploading Video to an AVV Server*, page 87).
SMS	Select this option to have the MVG 400 send SMS notifications when a motion event is detected. Messages are sent to the recipients specified in the **SMS and E-mail** screen, in the format defined there (see *SMS and E-mail Notifications*, page 81).
E-mail	Select the desired type of e-mail notification, as follows: • **None:** Do not send e-mail notifications when a motion event is detected. • **Text only:** When a motion event is detected, send e-mail notifications. Include a text message in the e-mail, but do not attach any images to the message. • **Text & image:** When a motion event is detected, send e-mail notifications that include both a text message and a picture of the first frame of the event. Note: E-mail messages are sent to the recipients specified in the **SMS and E-mail** screen, in the format defined there (see *SMS and E-mail Notifications*, page 81). Note: If **AVV** is selected, **Text & image** is automatically selected for this field, and cannot be disabled. A single e-mail containing both the standard notification text and the AVV notification is sent at the beginning of each event. In addition, a text-only e-mail is sent when the file transfer is completed. Note: If **AVV** was once selected, and has since been cleared, **Text & image** remains selected for this field until the selection is changed manually. If it is not changed, AVV is not activated, but notifications with snapshots are sent at the beginning of each event.

Field	Description
Activator 1 Activator 2	Select the action that each activator should perform when a motion detection event begins: • **Turn on**: Set the activator line to "high." • **Turn off**: Set the activator line to "low." • **None**: Do not change the activator's setting. Note: For additional information about working with activators, see *Sensor and Activator Settings*, page 115.
Go To Preset	All PTZ cameras connected to the MVG 400 that support presets are listed below this heading. If you want one of these cameras to automatically aim at a preset location when a motion detection event begins, beside the name of the camera, select the number of the preset location. Note: Preset locations are defined and assigned numbers using a client application such as the MultiClient. For additional information, please refer to the relevant client application guide. Note: If no PTZ cameras are connected to the unit, this field does not appear.

11. Under **On Motion Ended**, select the actions that the MVG 400 should perform when a motion detection event ends, as described above.

Configuring Video Lost

The MVG 400 monitors the camera connections. If the video signal from a camera is lost – i.e., the MVG 400 is not receiving video from it, either because of a malfunction in the camera, or because the camera has been disconnected from the unit or from its power source – the unit can respond in any or all of the following ways:

- Upload video of the event to an ftp server on the internet (see *Automatically Uploading Video to an AVV Server*, page 87). If e-mail notification recipients are defined in the **SMS and E-mail** screen, an e-mail message is sent to all the recipients when the Video Lost event begins and a second e-mail is sent when the video is successfully uploaded and is available for downloading by users. Each e-mail notification includes a link to the video file on the server and a picture of the event.
- Send event notifications to the SMS and/or e-mail recipients defined for the system (see *SMS and E-mail Notifications*, page 81). E-mail notifications can optionally include a picture of the event, and, if AVV is activated, a link to video of the event.
- Turn an activator on or off.
- Move any PTZ camera connected to the MVG 400 that supports presets to a preset location.

These actions can be implemented when the event begins, when it ends, or both.

⇨ *To configure video lost detection:*

1. In the **Camera** configuration screen, under **Video Lost**, select the actions that the MVG 400 should perform if video reception from the camera is interrupted, as described below.

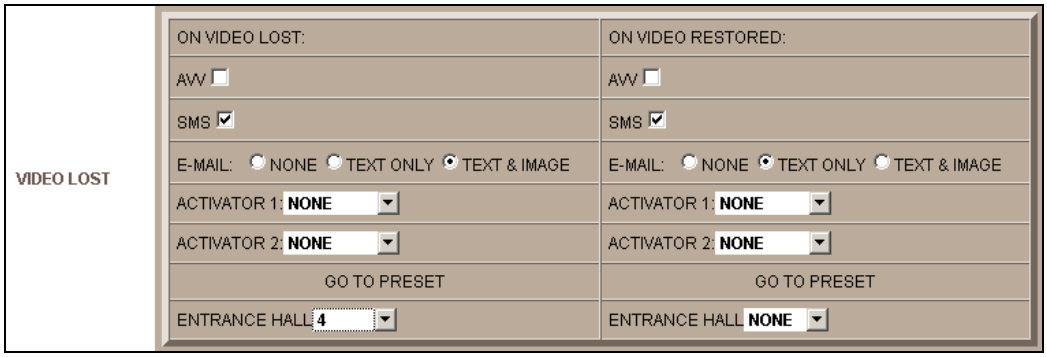


Figure 99: Video Lost settings

Field	Description
AVV	Select this option to have the MVG 400 send video of the seconds preceding the video-lost event to an AVV server for downloading. The video is downloaded to the site defined in the **AVV** screen, in the format defined there (see *Automatically Uploading Video to an AVV Server*, page 87), and e-mail notifications are sent to all e-mail recipients (see *SMS and E-mail Notifications*, page 81). Note: Two e-mail notifications are sent – one when the event is first detected, and the other when uploading of the video to the AVV server is completed. Thus, the video clip may not be available yet when you receive the first e-mail notification. Note: This feature only works if recording (either event-triggered or continuous) is activated for the camera (see *Video Recording Settings*, page 110). Note: For video-restored events, a few seconds of video following the restoration of the video connection are recorded. Note: This option only appears if AVV is activated for the MVG 400 (see *Automatically Uploading Video to an AVV Server*, page 87).
SMS	Select this option to have the MVG 400 send SMS notifications when a video-lost event is detected. Messages are sent to the recipients specified in the **SMS and E-mail** screen, in the format defined there (see *SMS and E-mail Notifications*, page 81).
E-mail	Select the desired type of e-mail notification, as follows: • **None:** Do not send e-mail notifications when a video-lost event is detected. • **Text only:** When a video-lost event is detected, send e-mail

Field	Description
	notifications. Include a text message in the e-mail, but do not attach any images to the message. • **Text & image:** When a video-lost event is detected, send e-mail notifications that include both a text message and a picture of the first frame of the event. Note: E-mail messages are sent to the recipients specified in the **SMS and E-mail** screen, in the format defined there (see *SMS and E-mail Notifications*, page 81). Note: If **AVV** is selected, **Text & image** is automatically selected for this field. A single e-mail containing both the standard notification text and the AVV notification is sent at the beginning of each event. In addition, a text-only e-mail is sent when the file transfer is completed. Note: If **AVV** was once selected, and has since been cleared, **Text & image** remains selected for this field until the selection is changed manually. If it is not changed, AVV is not activated, but notifications with snapshots are sent at the beginning of each event.
Activator 1 Activator 2	Select the action that each activator should perform when a video-lost event begins: • **Turn on**: Set the activator line to "high." • **Turn off**: Set the activator line to "low." • **None**: Do not change the activator's setting. Note: For additional information about working with activators, see *Sensor and Activator Settings*, page 115.
Go To Preset	All PTZ cameras connected to the MVG 400 are listed below this heading. If you want one of these cameras to automatically aim at a preset location when a video-lost event begins, beside the name of the camera, select the number of the preset location. Note: Preset locations are defined and assigned numbers using a client application such as the MultiClient. For additional information, please refer to the relevant client application guide. Note: If no PTZ cameras are connected to the unit, this field does not appear.

2. Under **On Video Restored**, select the actions that the MVG 400 should perform when a video-lost event ends – when the MVG 400 begins to receive a video signal from the camera again – as described above.

Video Recording Settings

The MVG 400 can record a video stream from each camera connected to it. Each stream is called a "recorder." Creating a recorder allocates space on the hard drive of the MVG 400 unit

for the video stream that is to be recorded. Recorded video can be downloaded from the hard drive for viewing and saving on the client.

The available space on the hard drive limits how much disk space can be allocated for each recorder. You can choose what should be done when the disk space allocated for a recorder is used up: either the earliest part of the recording is discarded and overwritten by the current recording, or recording stops until you erase the recordings manually.

Video can be recorded continuously or only when triggered by events. Event-triggered recording can be used to minimize disk usage, so that more time can be covered by a recorder before its allocated disk space is used up. For example, a second of high-quality recording requires about 16 KB of disk space. For a full day of high-quality video recording, this translates into 1.3 GB of disk space. By contrast, if there are 25 events in a day, and the recorder records 20 seconds for each event, only 8 MB of disk space are needed for the day.

VMD, sensor and activator events can function as triggers for event-triggered recording. Each recorder can be configured to respond to VMD events detected by the camera from which the recorder records or from any of the sensors connected to the MVG 400.

When an event occurs, it is often useful to see what happened immediately before and after it. For this reason, event-triggered recording can be configured to record a set number of seconds before and after each event ("pre-alarm" and "post-alarm"). To accomplish this, the MVG 400 always records the specified number of pre-alarm seconds, and then discards this data if no events are detected. For example, if the pre-alarm is five seconds, the system always stores the last five seconds of video. If an event is detected, this video is saved as the pre-alarm recording. Otherwise, it is deleted. The total recording time for each event is the sum of the pre-alarm time, the time of the event itself, and the post-alarm time.

Another way you can control the disk usage is through the recording *quality* settings. The system supports three standard quality levels, high, medium, and low. The lower the quality setting, the less disk space is required for each second of recording. Obviously, some stream quality is lost when lower quality settings are used. All three standard quality settings produce recordings in SIF resolution (320x240 pixels). High quality is the optimal recording configuration, and is recommended for use whenever possible.

Configuring Video Recording

⇨ *To set up video recording for a camera:*

1. In the **Camera** configuration screen, under **Recording Type**, select the desired type of recording, as follows:

   - **Continuous:** Recording takes place all the time, regardless of whether events occur or not
   - **By Event:** Recording only takes place when an event occurs
   - **None:** Recording is not activated for the camera

   If you select **By Event**, the fields required to configure the event-triggered recording are added to the screen:

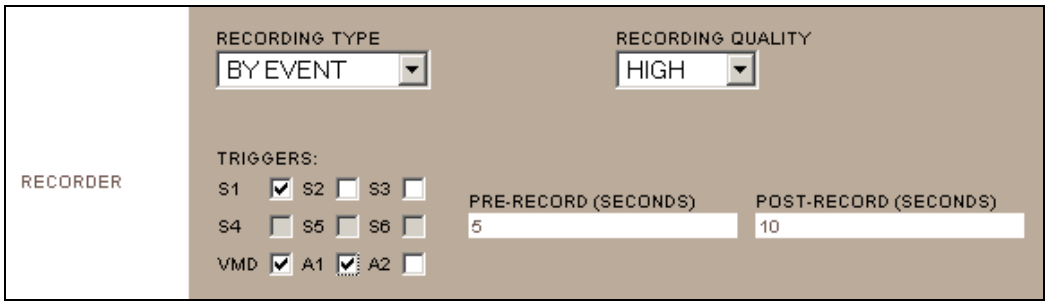


Figure 100: Settings for event-triggered recording

2. Under **Recording Quality**, select the recording quality, as follows:

   - **High:** 128 kbps / 10 fps (default setting)
   - **Medium:** 48 kbps / 7 fps
   - **Low:** 24 kbps / 4 fps

   Note: For information about selecting custom recording quality settings, see *Advanced Recorder Settings*, page 112.

3. If the recorder is event-triggered, select the triggers that will cause the recording to start:

   - **VMD:** If VMD is enabled for the camera (see *Video Motion Detection (VMD)*, page 101), and you want VMD events to trigger event recording, select **VMD**.
   - **S1** – **S4**: If you want sensor events to trigger event recording, select the sensors you want to function as triggers.
   - **A1** – **A2**: If you want activator events to trigger event recording, select the activators you want to function as triggers.

   Note: VMD is not automatically selected when it is enabled. Furthermore, if none of the sensors or activators is selected, and the VMD is not selected, no recording will take place.

4. If the recorder is event-triggered, fill in the pre-record and post-record values as follows:

   - **Pre-record:** The number of seconds before each event that should be included in the recording of the event. Range: 1–9 seconds.
   - **Post-record:** The number of seconds following each event that should be included in the recording of the event.

CAUTION: When you update the quality or size values in this screen, all the recorded video that is currently stored from this camera on the hard drive is deleted.

Advanced Recorder Settings

Advanced settings allow you to customize the recorder's video quality settings, the allocation of disk space among all the recorders connected to the MVG 400 unit, and whether or not recordings are automatically erased to make room for new recordings.

When advanced settings are activated, you can choose to record larger VGA frames, or smaller, QSIF frames, and you can select custom quality settings. Quality is defined by a bitrate/framerate pair. The following table summarizes the recommended settings and the approximate disk usage at each setting:

Window Resolution	High Quality	Medium Quality	Low Quality
QSIF (small frame)	10 fps 32 kbps 320 MB/day	6 fps 16 kbps 160 MB/day	4 fps 8 kbps 80 MB/day
SIF (medium-sized frame)	10 fps 128 kbps 1.4 GB/day	7 fps 48 kbps 480 MB/day	4 fps 24 kbps 240 MB/day
VGA (large frame)	7 fps 256 kbps 2.65 GB/day	5 fps 128 kbps 133 GB/day	4 fps 64 kbps 670 MB/day

Table 1: Recommended video quality settings

NOTE: Bitrate is defined in *kilobits per second* (*kbps*), and framerate is defined in *frames per second* (*fps*).

NOTE: At times, real-time demands on system resources may make it temporarily impossible for the system to adhere to the specified quality settings. In this case, the system automatically regulates itself to ensure the best use of available resources. When necessary, it may temporarily lower the framerate of a stream slightly in order to accommodate all of its immediate processing requirements. The quality of individual frames in the stream is not reduced.

NOTE: VGA recording introduces extra load on the unit. Therefore, VGA recording should be used sparingly.

By default, the recorders are allocated equal shares of the available disk space. If you wish, you can allocate the disk space differently. For example, if three recorders are event triggered, and the other records continuously, you may wish to allocate 20% of the disk space to the event-triggered recorders, and 75% to the continuous recorder. (It is recommended to leave approximately 5% of the disk space free for management overhead.) This allocation would maximize the recording time available for continuous recording without significantly limiting the disk space available for the recording of events.

CAUTION: When you update a recorder's disk allocation or size settings, all the recorded video that is currently stored on the hard drive is deleted.

Video storage normally follows the FIFO (first-in, first out) model: when the disk space allocated to a recorder is full, the system automatically erases the earliest recordings from the camera to make space available for new recordings. If this is not desirable, linear recording can be implemented instead. In this case, recording ceases for the camera when the disk space allocated to it is full. Recording from the camera can only be started again after the existing recordings are manually erased (see *Erasing Recorded Video*, page 156).

⇨ *To set advanced recorder settings for a camera:*

1. In the bottom of the **Camera** configuration screen, under **Recorder**, select **Enable Advanced Settings**. The fields required to configure advanced settings are displayed along with the other recorder settings above the checkbox:

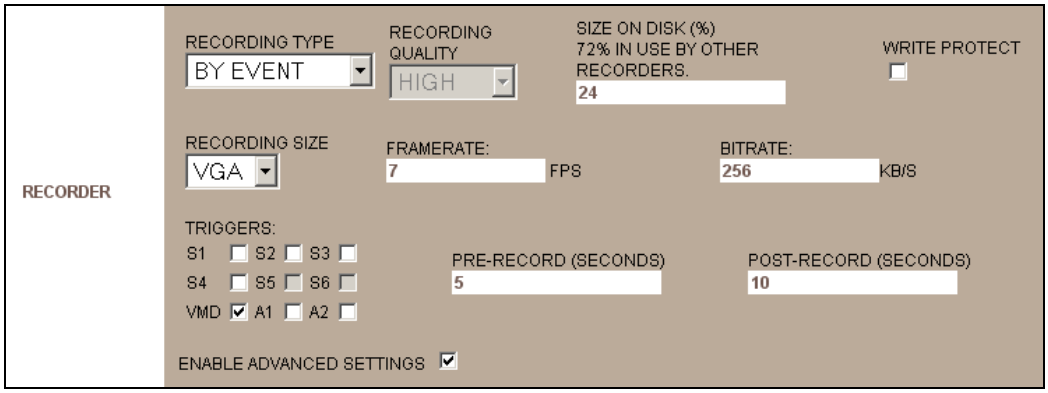


Figure 101: Advanced recorder settings

2. To modify the disk allocation for this recording stream, under **Size on Disk**, specify the proportion of the disk space to allocate for the stream, as a percent value.

   The percentage that is already allocated for the other cameras is indicated above the field – for example, "33% in use by other recorders." You can choose to allocate as much of the remaining disk space to this recorder as you wish. For example, if 33% of the total available disk space is already allocated to the other recorders, you could choose to allocate an additional 60% to this recorder. This would mean that 93% of the disk space is allocated to all the recorders together. The sum of the **Size on Disk** values of all the recorders cannot exceed **98**.

   Note: To modify the allocation of the other recorders, navigate to the **Camera** configuration screen of each recorder and modify the value in the **Size on Disk** field there.

   Note: To reset all disk allocations to their default values, in the **Camera Summary** screen, click **Set Recording Disk Size to Default**.

3. To modify the video quality settings, adjust the values in the following fields as necessary:

Field	Description
Write Protect	Select this option if you want to record linearly – continue recording until all the allocated disk space is full, and then stop recording. Note: If this option is not selected, recording follows the FIFO model: when the disk allocation is full, the earliest recordings from this camera are erased to make room for new recordings.
Recording size	Select one of the following: • VGA: Large picture (640x480 pixels) • SIF: Medium-sized picture (320x240 pixels) • QSIF: Small picture (160x120 pixels)
Framerate	Enter the desired number of frames per second.
Bitrate	Enter the desired number of bits per second.

Note: If you select custom video quality settings that exactly match a standard setting, the standard setting is automatically selected. For example, if you select recording size SIF, framerate 10, and bitrate 128, the value of the **Recording Quality** field is automatically switched to `High`, and advanced settings are hidden from view.

Note: The quality settings you select here become the default settings for downloading live video of the size you select. For example, if you select QSIF with a framerate of 8 and a bitrate of 24, these settings become the "High" quality setting for all QSIF streams that are downloaded to client applications.

Sensor and Activator Settings

Sensors are devices that detect events such as a door being opened or a light being turned on. Activators are external devices such as alarms and lights that can be turned on when a sensor is activated.

Up to four sensors and two activators can be connected directly to the MVG 400. In addition, up to 16 additional sensors can be connected to the unit through an ADAM module (see *Connecting Sensors Using an ADAM Module*, page 18).

NOTE: These devices are not supplied with the MVG 400.

The MVG 400 can be configured to perform any or all of the following actions when a sensor detects an event:

- Record a camera's video stream (see *Video Recording Settings*, page 110)
- Upload video of the event to an ftp server on the internet (see *Automatically Uploading Video to an AVV Server*, page 87). If e-mail notification recipients are defined in the **SMS and E-mail** screen, an e-mail message is sent to all the recipients when the event begins and a second e-mail is sent when the video is successfully uploaded and is available for

downloading by users. The e-mail notification includes a link to the video file on the server and a picture of the event.

- Send Sensor event notifications to the SMS and/or e-mail recipients defined for the system (see *SMS and E-mail Notifications*, page 81). E-mail notifications can optionally include a picture of the event, and, if AVV is activated, a link to video of the event.
- Turn an activator on or off (sensor events only)
- Move any PTZ camera connected to the MVG 400 that supports presets to a preset location (sensor events only)
- Switch to a different outline (Sensor 1 only)
- Change the display on a CCTV monitor (Sensor 4 only)

These actions can be performed when a sensor becomes active and/or when it becomes inactive. For example, you can configure a sensor such that an SMS notification is sent and an alarm is turned on when it is activated, and the alarm is turned off but no notification is sent when the sensor becomes inactive.

In addition, Sensor 1 can be used as a switch to activate a different outline (see *Configuring Sensor 1 to Switch Outlines*, page 121), and Sensor 4 can be used as a display switch for a CCTV monitor (see *Configuring Sensor 4 to Control CCTV Display*, page 123).

Configuring Sensors and Activators

The **Sensor Summary** screen summarizes the current settings of each sensor and activator in the system, and provides links to the sensor and activator configuration screens, in which these settings can be modified.

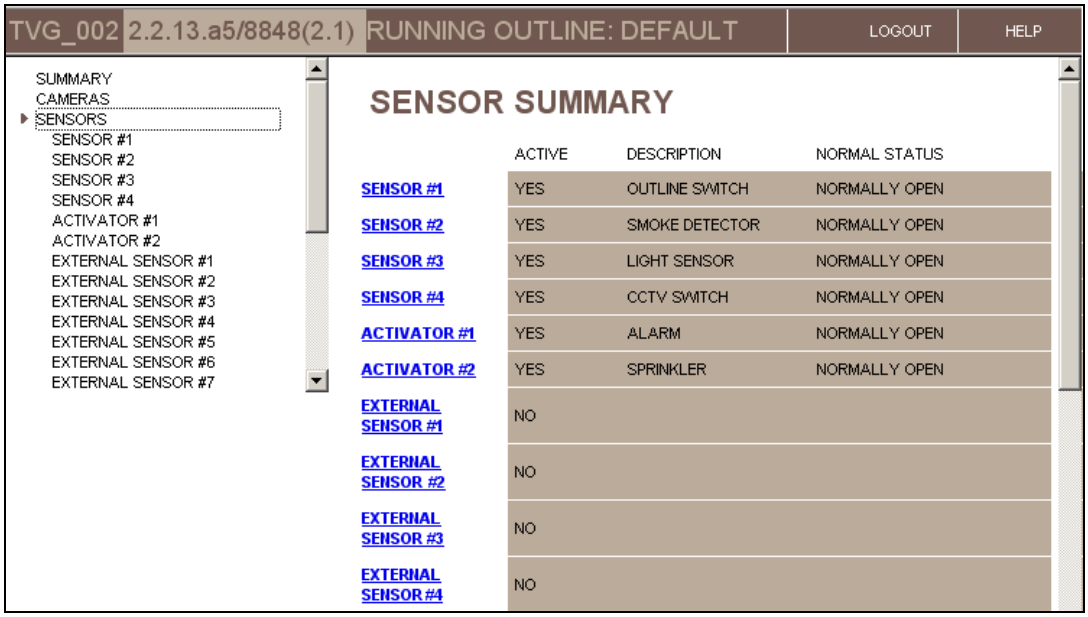


Figure 102: Sensor Summary screen

Each sensor and activator in the system has its own configuration screen. The sensor plugged into Sensor Input 1 (**In1**) is called “Sensor 1,” and is configured in the **Sensor #1** configuration screen, the sensor plugged into Sensor Input 2 (**In2**) is called “Sensor 2,” and is

configured in the **Sensor #2** configuration screen, and so forth. Sensors connected to the unit through an ADAM module appear as "External Sensors." They are configured in the same way as sensors connected directly to the unit.

NOTE: External sensors can only be enabled and configured if **ADAM Sensors** is enabled in the **General System Settings** screen (see *Configuring General System Settings*, page 48).

The sensor and activator configuration screens are accessed from the **Sensor Summary** screen.

⇨ *To open the Sensor Summary screen:*

- In the **Main Menu**, click **Sensors**.

⇨ *To configure a sensor or activator:*

1. In the **Main Menu**, under **Sensors**, click the sensor or activator (e.g., **Sensor #1** to configure the sensor plugged into **In1**). The relevant **Sensor** or **Activator** configuration screen opens:

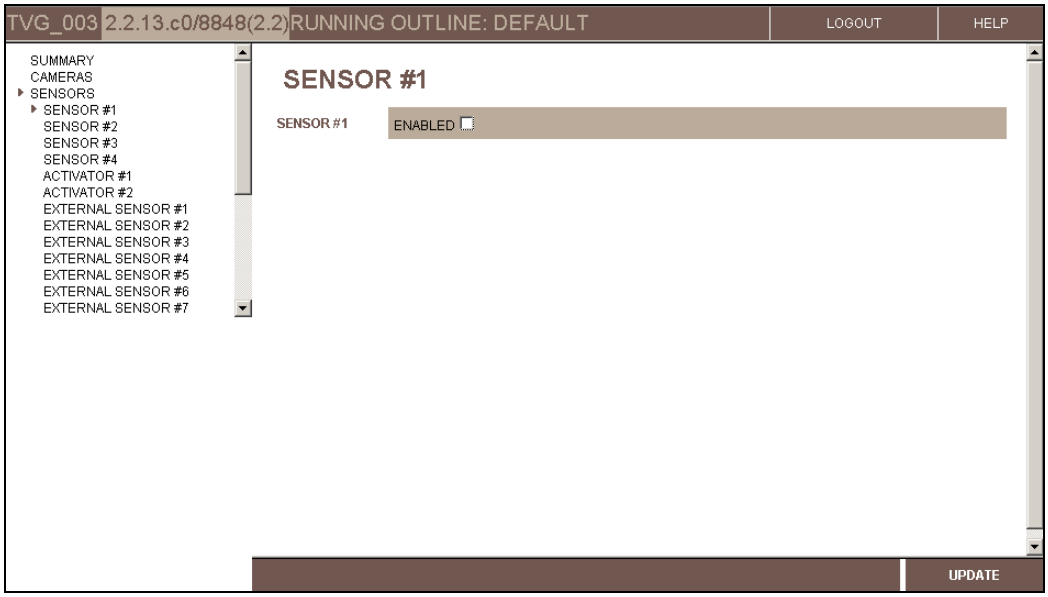


Figure 103: Sensor configuration screen

2. Select the **Enabled** checkbox. The fields required to configure the sensor or activator settings are added to the screen.

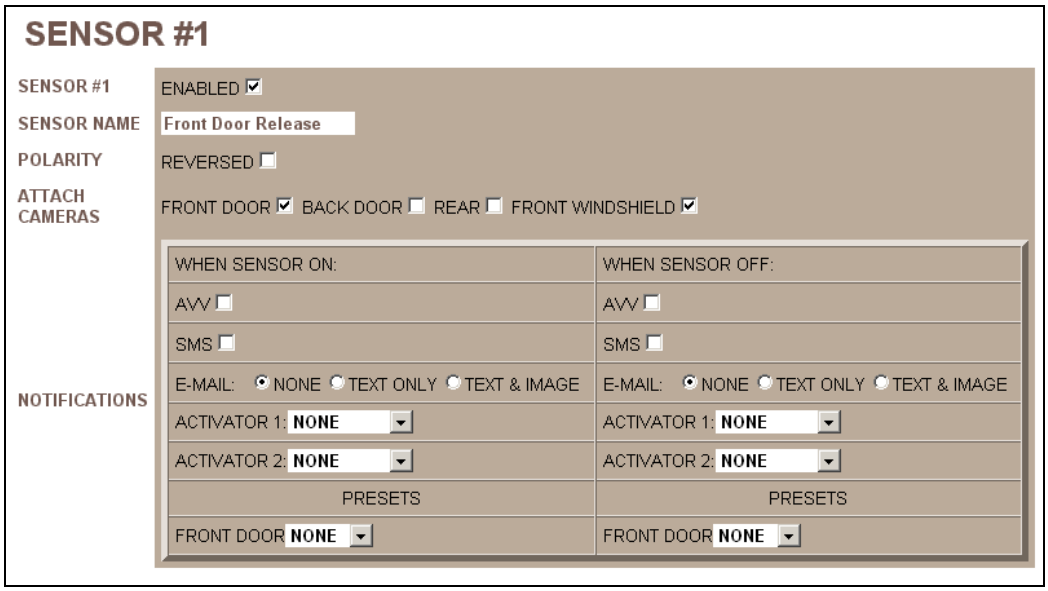


Figure 104: Sensor enabled

Note: If **Enabled** is not selected, the sensor cannot function as an event trigger and will not appear in client applications.

Note: Sensors that are not physically connected to the MVG 400 but are enabled may generate false alarms.

3. Fill in the fields as follows:

Field	Description
Sensor Name / Activator Name	Assign a name to the device (up to 20 characters). Each device must have a different name. The names are used when you view the video via a remote client such as the MultiClient and in e-mail and SMS notifications.
Polarity (Sensors only)	Select **Reverse** if the normal, inactive state of the sensor is *closed* – if it is activated from on to off. Note: Sensors are either designed to activate from “off to on” (normally open, or standard polarity) or from “on to off” (normally closed, or “reverse polarity”) when an event occurs. Consult the device’s manual to determine its normal state. Note: This field is equivalent to the "Normal Status" field for activators.
Normal status (Activators only)	Select the normal, inactive state of the activator. Note: Activators are either designed to activate from “off to on” (normally open) or from “on to off” (normally closed) when an event occurs. Consult the device’s manual to determine its normal state. Note: This field is equivalent to the "Polarity" field for sensors.

Field	Description
Attach cameras	Select the cameras to which the device should be linked, if desired. Selecting a camera has the following effects: • If you receive e-mail notifications of events that were triggered by this device, and the notifications contain images, an e-mail with an image will be sent for each of the selected cameras. • If you activate AVV for the device, video of events from each of the selected cameras is uploaded to the AVV server. Note: If the camera records by event, make sure to define the device as one of the recorder triggers in the camera configuration. Otherwise, the MVG 400 may not record the event, and therefore it will not be possible to upload it to the AVV server. For information about defining recorder triggers, see *Configuring Video Recording*, page 111. • Events from the device will appear in the client interface under the selected camera as well as under the device. This makes it possible to play back video of the event by dragging and dropping it into a camera pane in the MultiClient.

4. Under **Notifications**, under **When Sensor On** or **On Activator Activated**, specify the actions that should be performed when the device triggers an event, as follows:

Field	Description
AVV	Select this option to have the MVG 400 send video of the event to an AVV server for downloading. The video is downloaded to the site defined in the **AVV** screen, in the format defined there (see *Automatically Uploading Video to an AVV Server*, page 87) , and e-mail notifications are sent to all e-mail recipients (see *SMS and E-mail Notifications*, page 81). Note: Two e-mail notifications are sent – one when the event is first detected, and the other when uploading of the video to the AVV server is completed. Thus, the video clip may not be available yet when you receive the first e-mail notification. Note: This feature only works if the device is attached to a camera and recording (either event-triggered or continuous) is activated for the camera (see *Video Recording Settings*, page 110). Note: This option only appears if AVV is activated for the MVG 400 (see *Automatically Uploading Video to an AVV Server*,

Field	Description
	page 87).
SMS	Select this option to have the MVG 400 send SMS notifications when the device triggers an event. Messages are sent to the recipients specified in the **SMS and E-mail** configuration screen in the format defined there (see *SMS and E-mail Notifications*, page 81).
E-mail	Select the desired type of e-mail notification, as follows: • None: Do not send e-mail notifications when an event is detected. • Text only: When an event is detected, send e-mail notifications. Include a text message in the e-mail, but do not attach any images to the message. • Text & image: When an event is detected, send e-mail notifications that include both a text message and a picture of the first frame of the event. If multiple cameras are attached to the device, a separate e-mail is sent for each camera. If no cameras are attached to the device, no e-mails are sent. Note: E-mail messages are sent to the recipients specified in the **SMS and E-mail** screen, in the format defined there (see *SMS and E-mail Notifications*, page 81). Note: If **AVV** is selected, **Text & image** is automatically selected for this field. A single e-mail containing both the standard notification text and the AVV notification is sent at the beginning of each event. In addition, a text-only e-mail is sent when the file transfer is completed. Note: If **AVV** was once selected, and has since been cleared, **Text & image** remains selected for this field until the selection is changed manually. If it is not changed, AVV is not activated, but notifications with snapshots are sent at the beginning of each event.
Activator 1 Activator 2 (Sensors only)	For each sensor, specify the action that each activator should perform when the sensor triggers an event, as follows: • **Turn on**: Set the activator line to “high.” • **Turn off**: Set the activator line to “low.” • **None**: Do not change the activator’s status. Note: These settings are not available for activators.

Field	Description
Load Outline (Sensor 1 only)	If Sensor 1 is a toggle switch that will be used to switch outlines, select **Enabled**, and then follow the instructions under *Configuring Sensor 1 to Switch Outlines*, page 121. Note: This option only appears if **Outline Switching** is set to **Sensor** in the **General Settings** screen. For additional information, see page 52.
TV-Out Display Switch (Sensor 4 only)	If Sensor 4 is a push-button switch that will be used to change the display on a CCTV monitor connected to the unit, select this option. For additional information, see *Configuring Sensor 4 to Control CCTV Display*, page 123. Note: This option only appears if **Display Switch Via Sensor** is enabled in the **TV-Out** screen (see *Configuring a CCTV Monitor (TV-Out)*, page 54)
Presets (Sensors only)	All PTZ cameras connected to the MVG 400 that support presets are listed below this heading. If you want one of these cameras to automatically aim at a preset location when a sensor event begins, beside the name of the camera, select the number of the preset location. Note: Preset locations are defined and assigned numbers using a client application such as the MultiClient. For additional information, please refer to the relevant client application guide.

5. Under **Notifications**, under **When Sensor Off** or **On Activator Deactivated**, specify the actions that should be performed when an event ends, as described above.

6. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Configuring Sensor 1 to Switch Outlines

A toggle switch can be connected to Sensor 1 instead of a sensor. The switch can be used to toggle between two outlines. For example, when the bus is parked in the lot, the "Parked" outline – which activates sensors, notifications, and event-triggered recording – is loaded. When the bus driver begins driving, he or she can flick the switch to load the "Driving" outline, in which sensors and most notifications are deactivated, and recording is continuous.

NOTE: In some cases, an alarm panel may be connected to Sensor 1 instead of a toggle switch. In this case, the alarm can perform the same function as the toggle switch – when the alarm is turned on or off, it automatically toggles the active outline as well. For additional information, see *Connecting a Sensor Directly to the Unit*, page 17.

NOTE: This feature can only be activated in the **Sensor 1** configuration screen if it is first enabled in the **General System Settings** screen (see *General System Settings*, page 47).

⇨ *To configure Sensor 1 as an outline switch:*

1. In the **Main Menu**, under **Sensors**, click **Sensor 1**. The **Sensor #1** configuration screen opens.

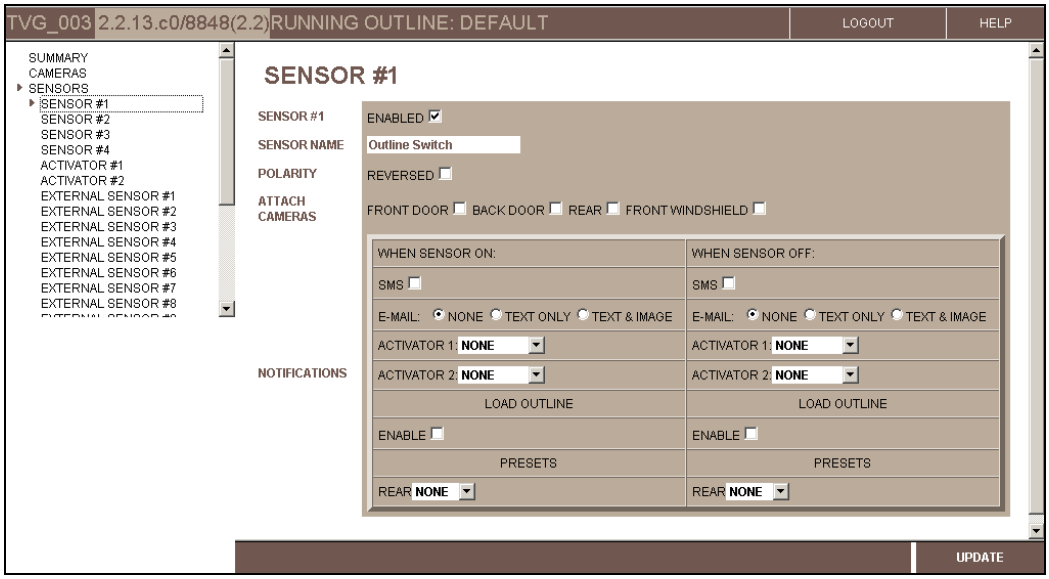


Figure 105: Sensor #1 configuration screen

Note: Every time the outline is switched, a sensor event is triggered. If notification settings are activated, notifications will be triggered each time the display is changed.

2. Under **When Sensor On**, under **Load Outline**, select **Enable**. The **Outline** field is added to the screen.

Figure 106: Outline field

3. In the dropdown list, select the name of the outline you want to load when the toggle switch is turned on.

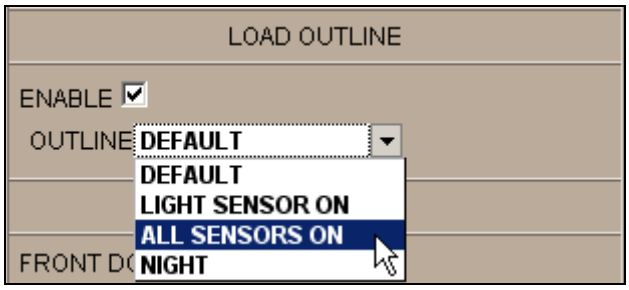


Figure 107: Selecting an outline

4. Under **When Sensor Off**, under **Load Outline**, select the name of the outline you want to load when the switch is turned off, as described in steps 2–3.

5. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Configuring Sensor 4 to Control CCTV Display

A push-button switch can be connected to Sensor 4 instead of a sensor. If a monitor is connected to the MVG 400, Sensor 4 can then be used to change the display in the CCTV monitor. With each press of the button, the display cycles to the next display type, in the following order:

- **Split screen:** The screen is divided into four parts, and live video from each camera is displayed in one of the parts.
- **Camera 1:** Full-screen display of live video from Camera 1.
- **Camera 2:** Full-screen display of live video from Camera 2.
- **Camera 3:** Full-screen display of live video from Camera 3.
- **Camera 4:** Full-screen display of live video from Camera 4.
- **Rotate:** Full-screen display that cycles from one camera to the next. (The rotation delay is defined in the **TV-Out Settings** screen; see *Configuring a CCTV Monitor (TV-Out)*, page 54.)
- **None:** A digital clock is displayed, and no video is displayed.

NOTE: This feature can only be activated in the **Sensor 4** configuration screen if it is first enabled in the **TV-Out** screen (see *Configuring a CCTV Monitor (TV-Out)*, page 54).

⇨ *To configure Sensor 4 as a CCTV display switch:*

1. In the **Main Menu**, under **Sensors**, click **Sensor 4**. The **Sensor #4** configuration screen opens.

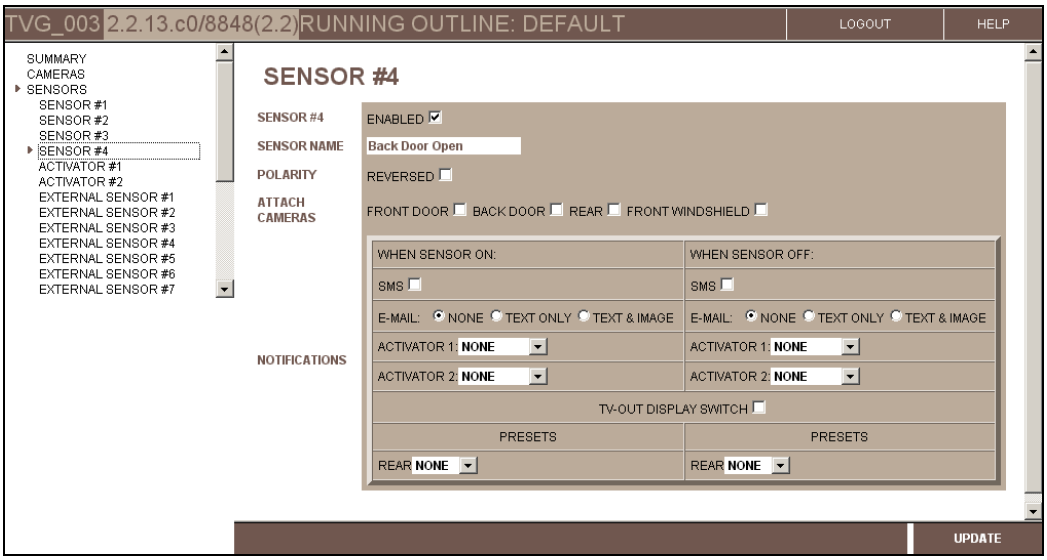


Figure 108: Sensor #4 configuration screen

Note: Every time the CCTV display is switched, a sensor event is triggered. If notification settings are activated, notifications will be triggered each time the display is changed.

2. Select the **TV-Out Display Switch** checkbox.
3. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Outlines

Outlines define alternate sets of recording and event-handling settings. For example, you could define one set of settings for times when the vehicle is in operation and another set for when it is parked; when the vehicle is in operation, the motion and sensor notifications would be turned off, but when it is parked, they would be turned on.

Outline configuration is an optional feature of the MVG 400. If you do not define any outlines, all the event-handling settings are automatically stored in the *Default* outline. You do not have to configure the outline settings at all in this case. If you choose to use the Outline feature, you can define up to five additional outlines.

When multiple outlines have been defined, the running outline – the outline whose settings are currently being used by the system – can be switched in one of three ways:

- **Manually:** By selecting the desired outline in the configuration utility, as described below
- **Sensor:** In response to sensor events on Sensor 1 (toggling of a switch connected to **In1**)
- **Schedule:** According to a predefined schedule

The Sensor and Schedule alternatives are mutually exclusive; only one of these two automatic switching methods can be active at any given time. That is, for example, when switching is triggered by toggling the Sensor 1 switch, it cannot also be triggered by a schedule. The active outline-switching method is selected in the **General Systems Settings** screen (see page 52).

For information about using Sensor 1 to trigger outline switching, see *Sensor and Activator Settings*, page 115. For information about setting up a schedule for outline switching, see *Schedules*, page 129.

The name of the outline that is currently running is displayed at the top of the screen.

Figure 109: Outline that is currently running

Creating an Outline

➪ *To create a new outline:*

1. In the **Main Menu**, click **Outlines**. The **Outlines** screen opens:

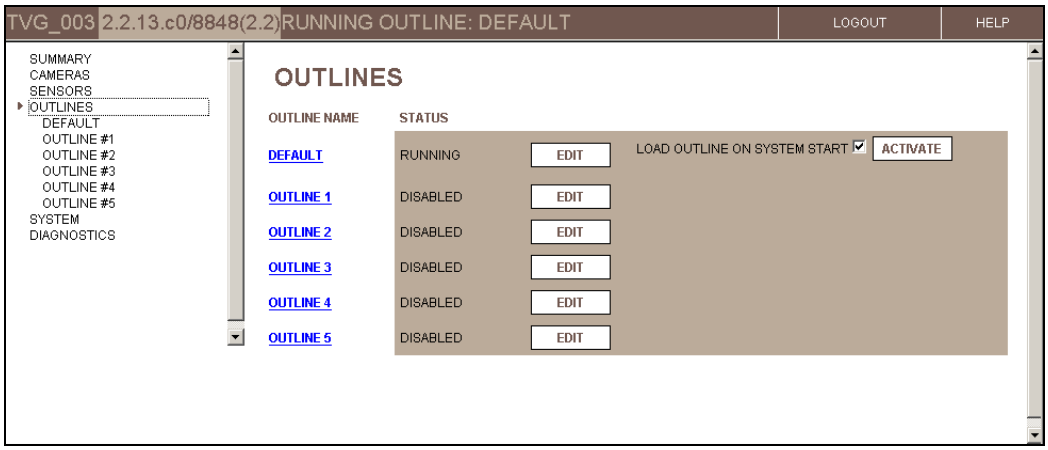


Figure 110: Outlines screen

2. In the **Outlines** screen, or in the **Main Menu**, click one of the *Outline* links (e.g., **Outline 1** in the **Outlines** screen or **Outline #1** in the **Main Menu**.) The outline's summary screen opens:

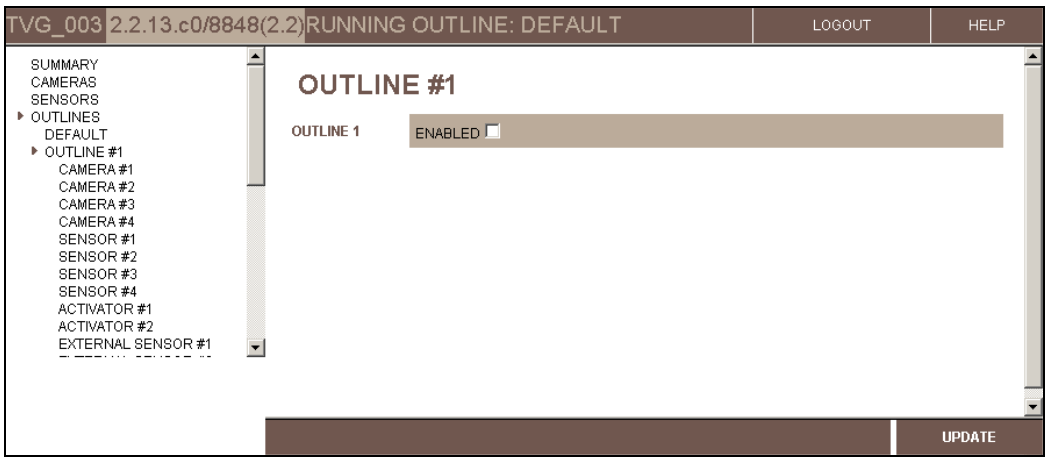


Figure 111: Outline #1 summary screen

3. Select **Enabled**. The outline's initial recording and event-handling settings are displayed:

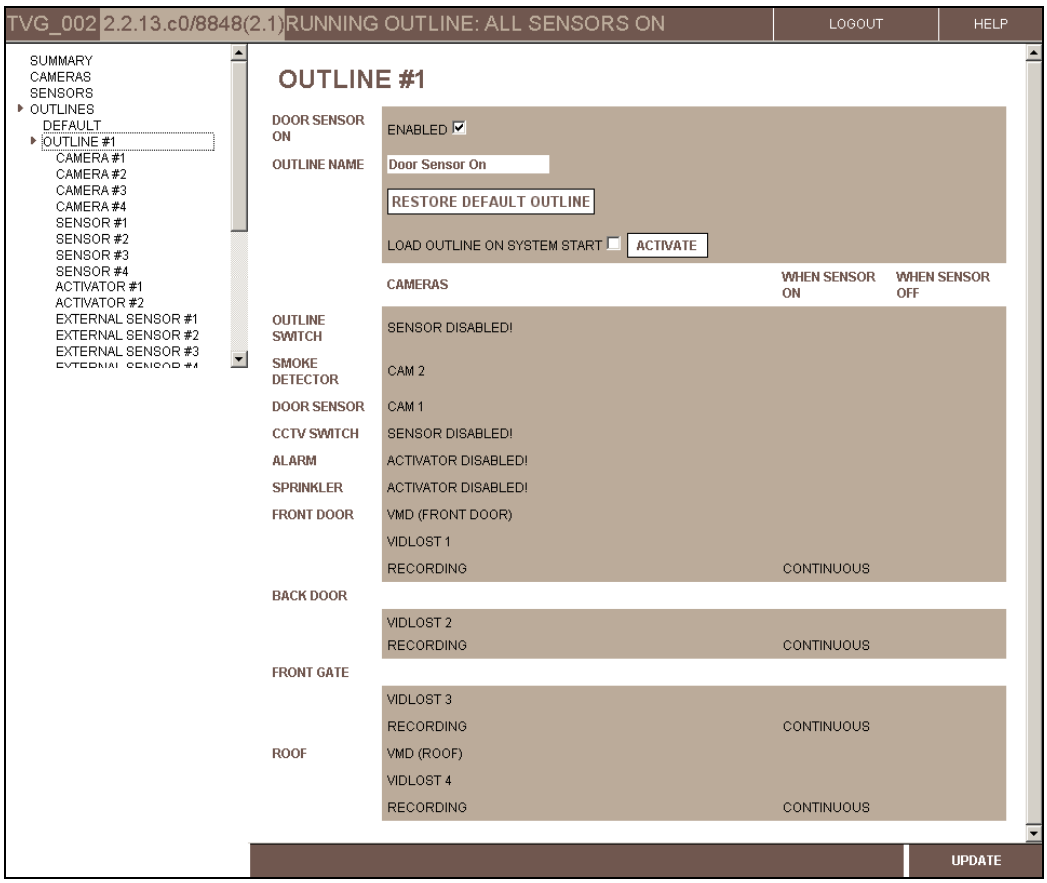


Figure 112: Outline #1 summary screen – enabled

Note: The initial settings of each outline are based on the Default outline.

4. Under **Outline Name**, modify the name of the outline as required, and then click **Update**. The name is updated. The change is fully implemented when the configuration changes are saved and the unit is restarted. (You can save and restart now, and then continue configuring the outline, or wait until you have configured more settings before saving the changes and restarting.)

   Note: If the outline has already been configured, and you want to reset the settings to their defaults (namely, the settings of the Default outline) before you begin reconfiguring them, click **Restore Default Outline**, and then click **Update**.

5. In the **Main Menu**, under the selected outline, click the first device. For example, under **Outline #1**, click **Camera #1**.

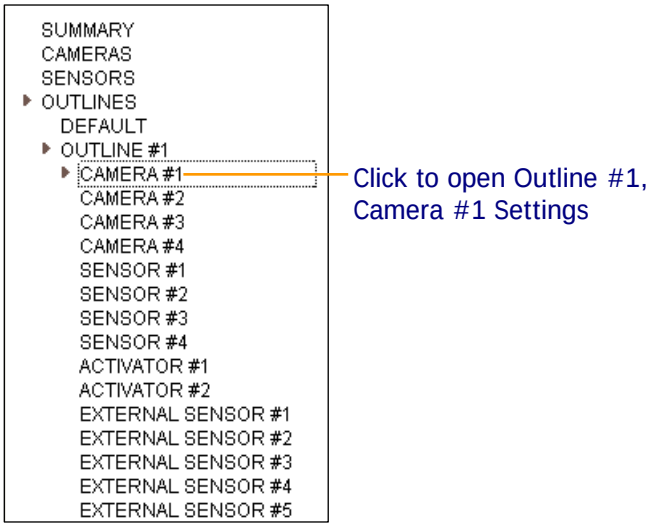


Figure 113: Opening Outline #1, Camera #1 settings in the Main Menu

The configuration screen for the device opens.

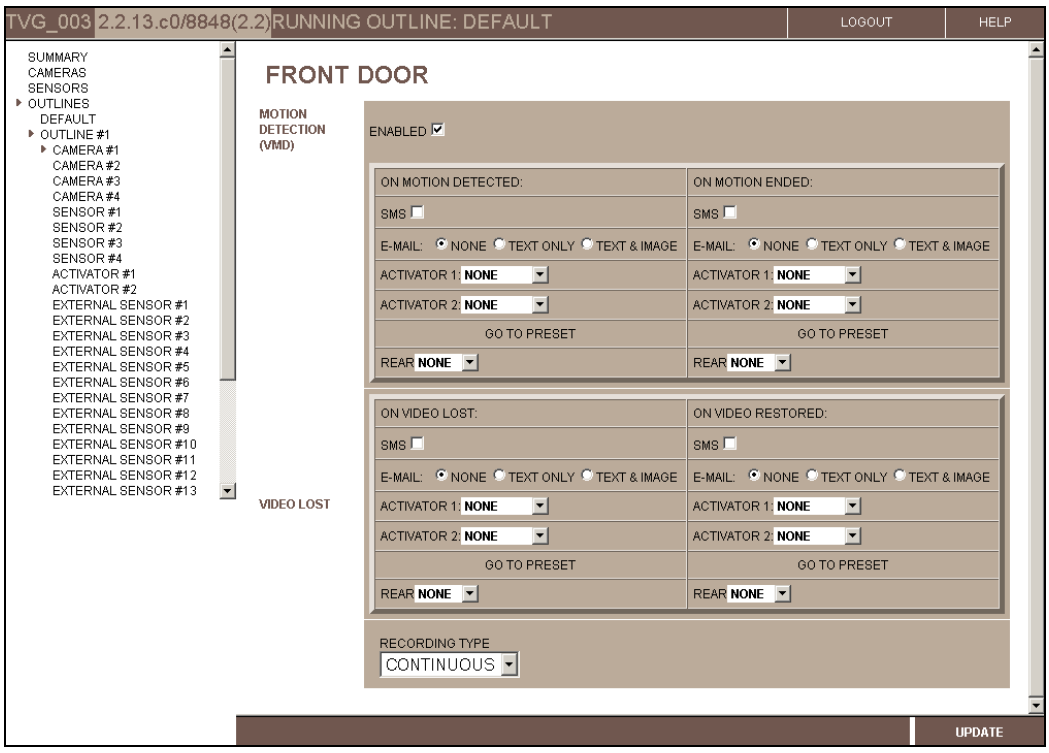


Figure 114: Outline #1, Camera #1 configuration screen

Note: If a device is not enabled in the Default outline, it cannot be enabled in any other outline. In this case, the configuration screen of the device in the outline section will say the device is disabled (see figure 115). For information about activating a device in the Default outline, see page 117.

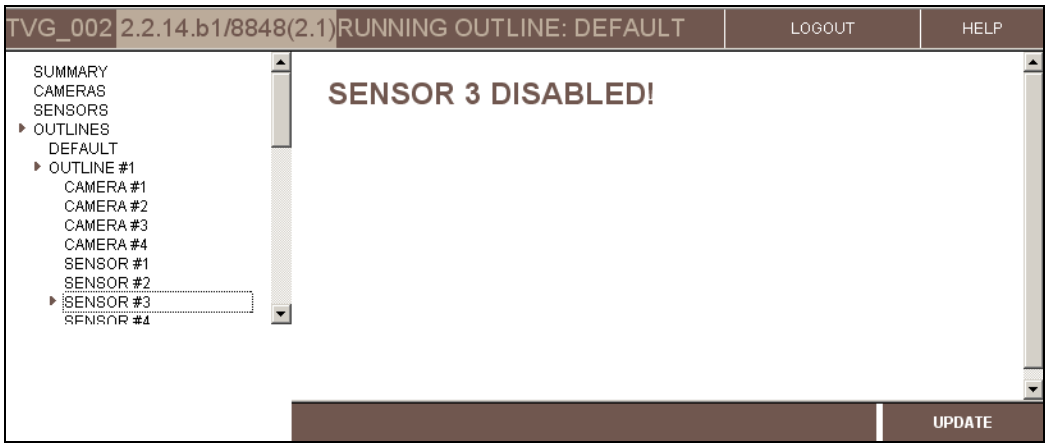


Figure 115: Device that is not enabled in the Default outline

6. Select the desired settings for the device in the current outline.

   Note: For information about the settings, please refer to the section of this manual that relates to each type of setting, as follows:

   - *Video Motion Detection (VMD)*, page 101
   - *Configuring Video Lost*, page 108
   - *Video Recording Settings*, page 110
   - *Sensor and Activator Settings*, page 115

   Note: In the Camera screens, when recording is *by event*, the sensors and activators can only be selected as triggers if they are already enabled in the current outline. Thus, for example, if you want to select Sensor 1 as a trigger for the Camera 1 recorder, you must first enable Sensor 1 in its configuration screen, and then select it in the Camera 1 configuration screen.

7. Click **Update**.

8. Repeat steps 5–7 for each of the cameras, sensors, and activators connected to the MVG 400.

9. Save the changes. The settings will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Activating Outlines Manually

If more than one outline is defined, you can manually select the outline you want to run at any time. When you do, you can also specify that the selected outline be loaded automatically when the unit first starts up. In this case, the selected outline replaces the *Default* outline as the system default.

NOTE: Sensor and schedule-based outline switching override manual outline selections and the start-up outline. For example, if Sensor 1 is configured to function as an outline switch, and the "Daytime" outline is selected for activation when the Sensor 1 is off, the “Daytime” outline will load automatically whenever the outline switch is in the OFF position. If the Default outline is selected for start-up, it will be replaced immediately after startup by the "Daytime" outline. For additional information, see *Configuring Sensor 1 to Switch Outlines*, page 121; *Schedules*, page 129.

⇨ *To manually switch the running outline:*

- In the **Outlines** screen, in the line in which the outline is listed, or in the relevant outline configuration screen, click **Activate**. The selected outline runs immediately. If the **Outlines** screen was not already opened, it opens and displays an updated summary of the outline settings.

⇨ *To select the start-up outline:*

1. In the **Outlines** screen, in the line in which the outline is listed, or in the relevant outline configuration screen, select **Load Outline on System Start**.
2. Click **Activate** (to the right of the checkbox). The selected outline runs immediately, and is selected as the start-up outline that will be loaded automatically whenever the system starts. If the **Outlines** screen was not already opened, it opens and displays an updated summary of the outline settings.

Schedules

Schedules allow you to configure the unit to automatically switch the running outline at specified times. You can set up standard repeating schedules for routine time periods, such as regular work weeks or the summer months. You can also define special schedules for holidays, both repeating holidays (e.g., New Years Day) and non-repeating holidays (e.g., a presidential visit or the opening ceremony of the Olympics).

The schedule is only implemented by the system if the following conditions are met:

- Multiple outlines are defined for the system (see *Outlines*, page 124)
- Schedule-triggered outline-switching is activated in the **General System Settings** screen (see *General System Settings*, page 47)

⇨ *To configure the schedule:*

1. In the **Main Menu**, under **System**, click **Schedules**. The **Schedules** screen opens. If schedule-triggered outline switching is not activated in the **General System Settings** screen, *Inactive* appears in parentheses after the name of the screen. In this case, you can configure the schedule, but it will not be implemented unless you activate schedule-triggered outline switching.

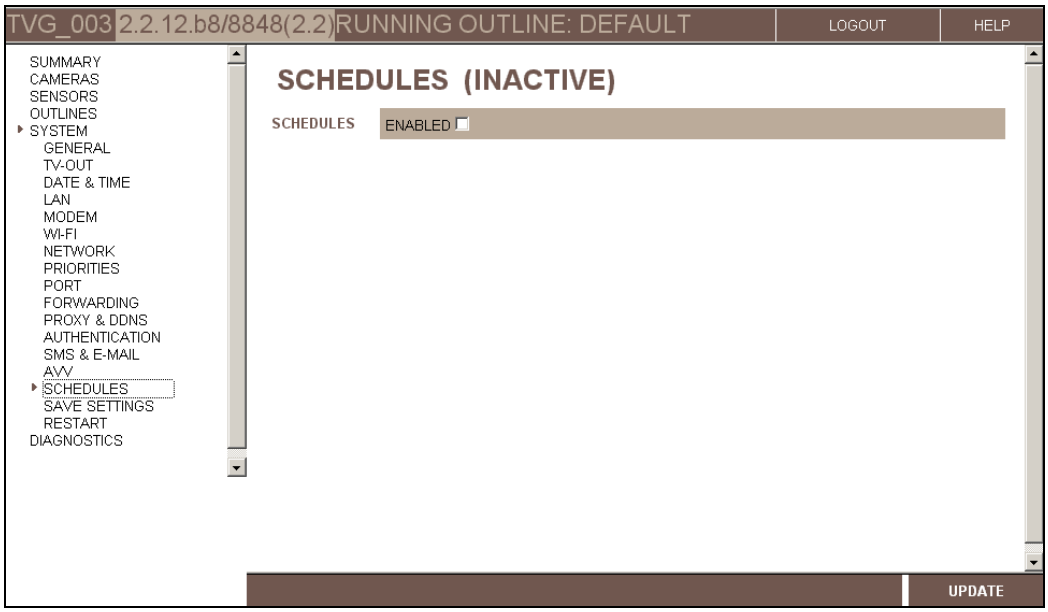


Figure 116: Schedules screen (inactive)

2. Select **Enabled**. The schedule grid and its controls are displayed.

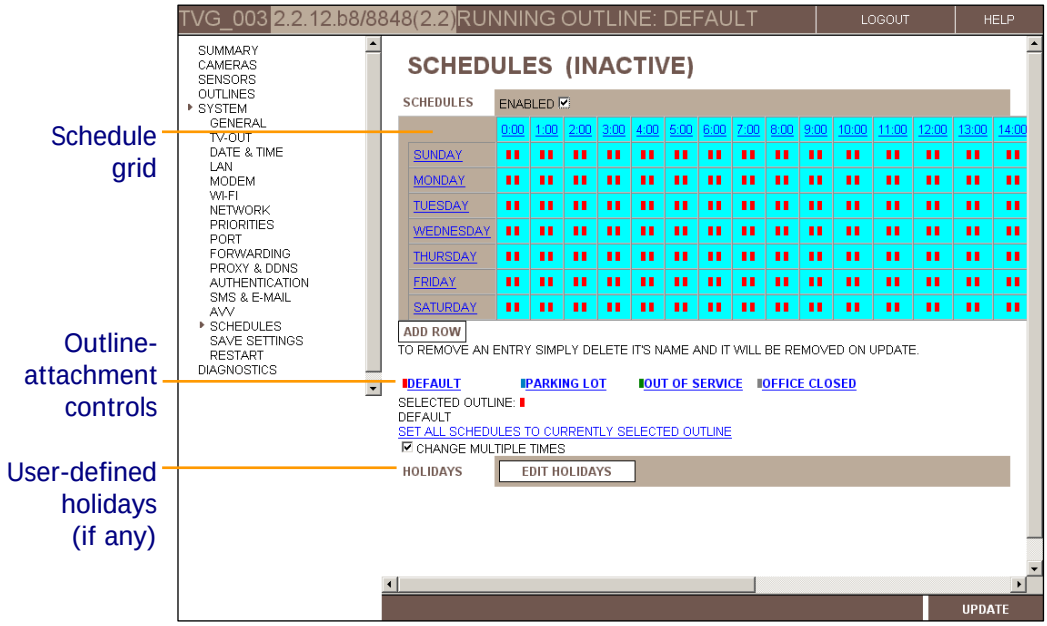


Figure 117: Schedules enabled

The upper part of the screen contains the schedule grid. Below it are controls that allow you to attach specific outlines to particular days and times in the grid. Below these, user-defined holidays appear, if any are defined.

Initially, the schedule grid contains a row for each day of the week and a column for each hour of the day. This grid defines the routine schedule for regular work weeks. Each cell in the grid contains two colored rectangles (see figure 118 below). Each of these rectangles represents a half hour – half of the time represented by the entire cell. The color of the rectangle indicates which outline it represents.

The key to the color-coding of the outlines appears below the grid. For example, in figure 118 below, the *Default* outline is represented in the grid by a red rectangle, the *Parking Lot* outline by a blue rectangle, the *Out of Service* outline by a green rectangle, and the *Office Closed* outline by a gray rectangle. Thus, the top-left cell in the grid says that the *Default* outline should run from midnight to 12:30 am, and the *Out-of-Service* outline should run from 12:30 am to 1:00 am.

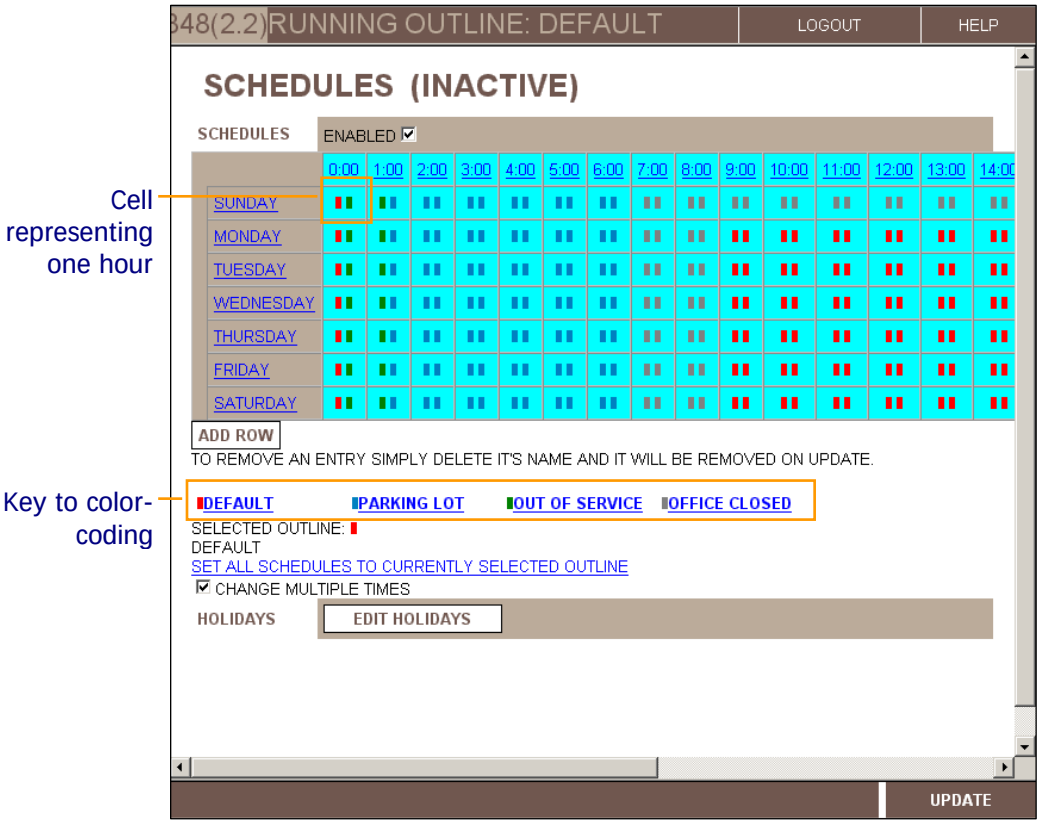


Figure 118: Color-coded schedule

3. Follow the instructions below to create a basic, repeating weekly schedule and to add holidays to the schedule.

Configuring a Standard Weekly Schedule

This section explains how to set up a basic, repeating weekly schedule of outline implementation.

➪ *To define the basic weekly schedule:*

1. In the color-coding key, click the name of the outline you want to assign to one or more time slots in the schedule grid. A colored rectangle representing the selected outline is displayed below the key area, under **Selected Outline**, and the name of the outline is displayed below this. For example, in the figure below, the selected outline is *Default*, represented by the red rectangle.

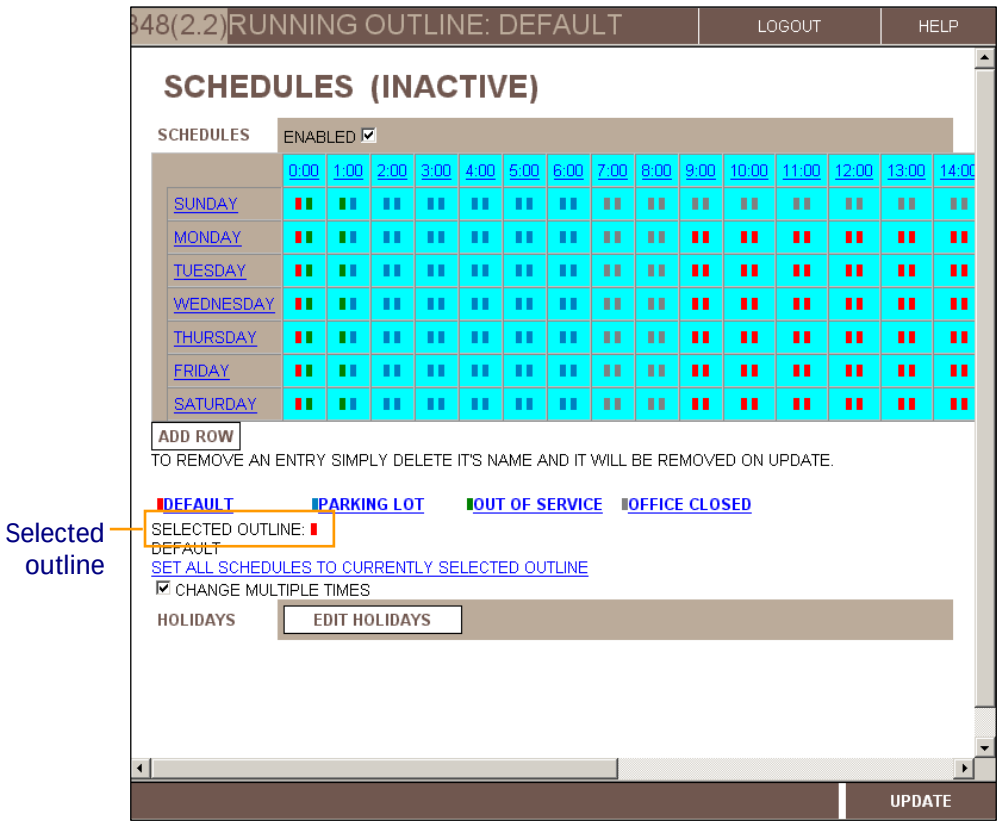


Figure 119: Color-coded schedule

2. If you want to apply the outline to the entire week's schedule, click **Set all schedules to currently selected outline**. All of the rectangles in the schedule grid are switched to the color representing the selected outline.

3. If you want to apply the outline to specific day of the week, click the name of the day in the schedule grid. All of the rectangles in the row are switched to the color representing the selected outline.

4. If you want to apply the selected outline to a rectangular area of the schedule grid (containing multiple rectangles), do the following:

   - Make sure the **Change Multiple Times** checkbox is *selected*.
   - Click one corner of the rectangular area. A border appears around the rectangle.

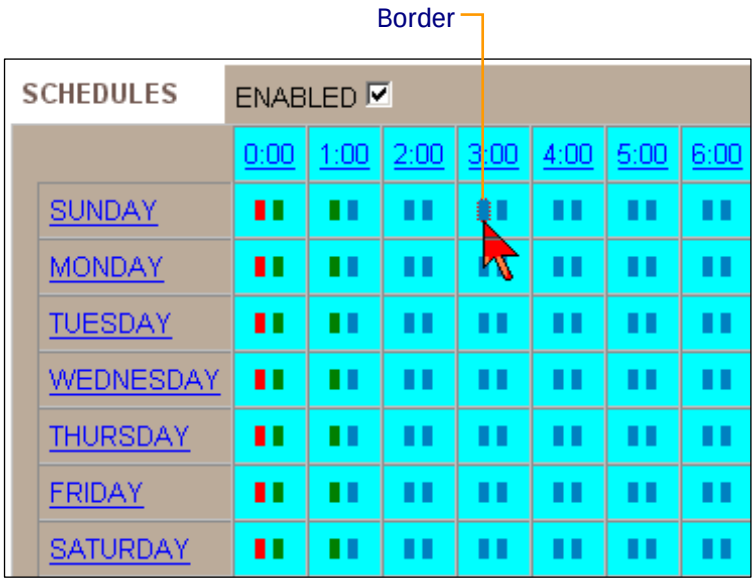


Figure 120: Rectangle with border

- Click the diagonally opposite corner of the rectangular area that you want to mark. The selected outline is applied to the entire rectangle.

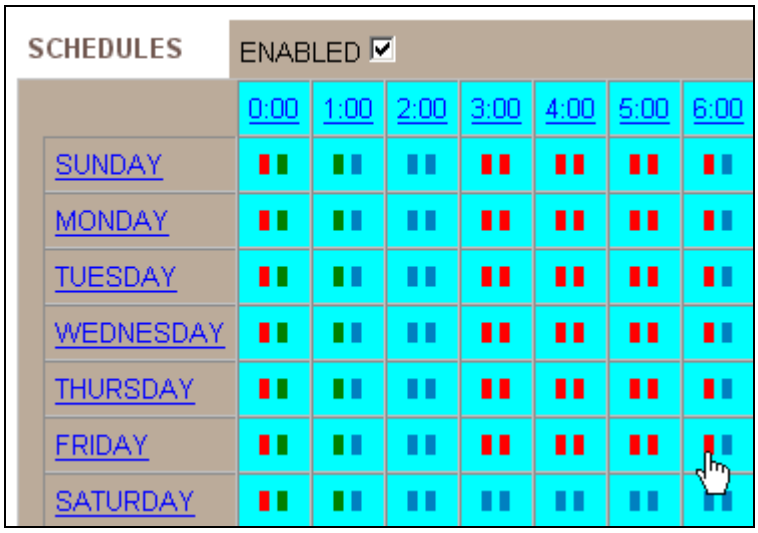


Figure 121: Clicking the diagonally opposite corner of the area

Note: The entire schedule grid, representing full 24-hour days, may not all be visible at one time on your screen. Use the horizontal scrollbar at the bottom of the screen to move the display to the right or left so that you can see the relevant times of day.

5. If you want to apply the selected outline to individual half-hour time slots, do one of the following:

   - With the **Change Multiple Times** checkbox *selected*, double-click the rectangle representing the time slot.
   - With the **Change Multiple Times** checkbox *cleared*, click the rectangle representing the time slot.

The rectangle is displayed in the color representing the selected outline.

6. Repeat steps 1–5 as necessary for each type of outline you want to apply to a time slot in the schedule.

7. Click **Update**, and then save the settings. They will be implemented after the unit is restarted (see *Saving Configuration Changes*, page 139).

Defining Holiday Schedules

Holiday schedules are essentially exceptions to the standard weekly schedule. When you define a holiday, you can choose to apply an existing day's schedule to it. For example, you can apply the Sunday schedule to Independence Day. Alternatively, you can create a new day's schedule and apply the new schedule to one or more holidays. To do this, you add a row to the schedule grid. For example, you could add a row called Business Holiday, define a schedule for it, and then create a holiday called Independence Day to which you apply the Business Holiday schedule (see *Defining a New Schedule Row*, page 138).

Holiday schedules can overlap. For example, if you create a holiday schedule for the first week of July, and another holiday schedule for July 4th, the two schedules both apply to July 4th. In this case, the system creates a hierarchy of schedules:

- Shorter time periods are given precedence over longer time periods.
- Non-repeating schedules are given precedence over repeating schedules.
- Repeating holiday schedules are given precedence over the standard weekly schedule.

Thus, in the example above, the July 4th will schedule will be implemented on July 4th, and the schedule for the first week of July will be implemented on the other days of the week.

⇨ *To define a holiday:*

1. In the **Schedules** screen, in the **Holidays** section, click **Edit Holidays**.

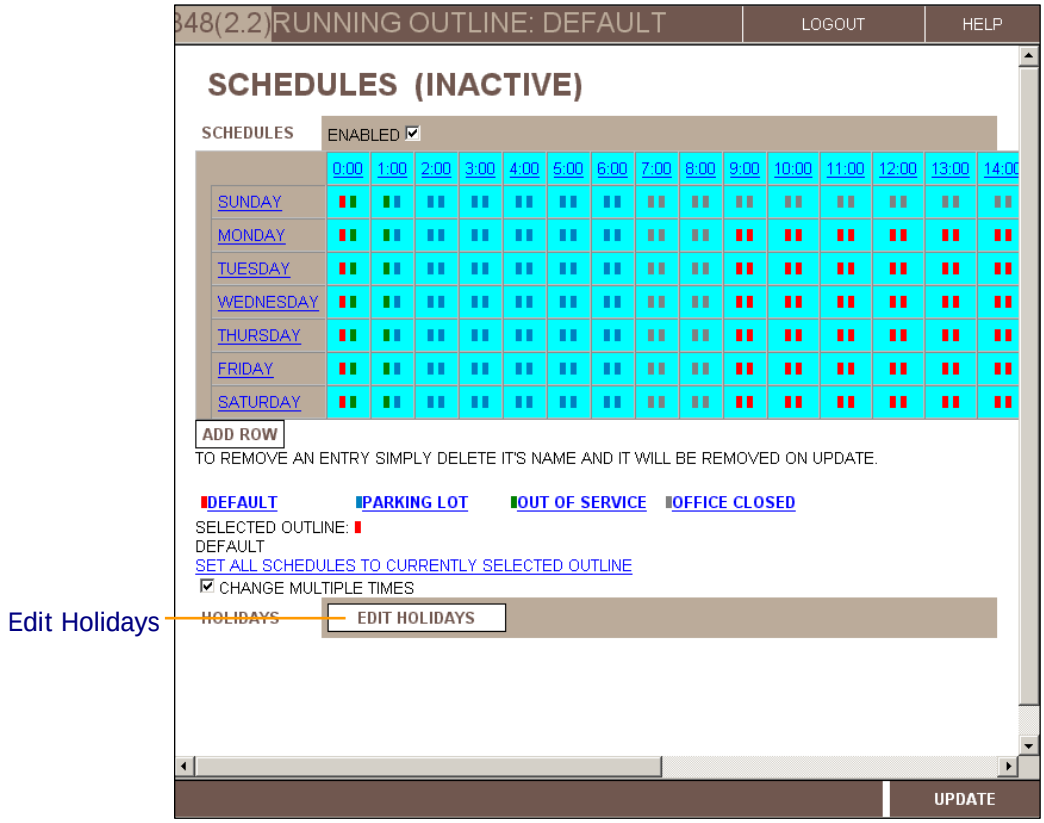


Figure 122: Edit Holidays

The **Holidays** screen opens. The screen displays the schedule grid at the top (it is not editable here), and below it, a list of the holidays that are already defined (if any).

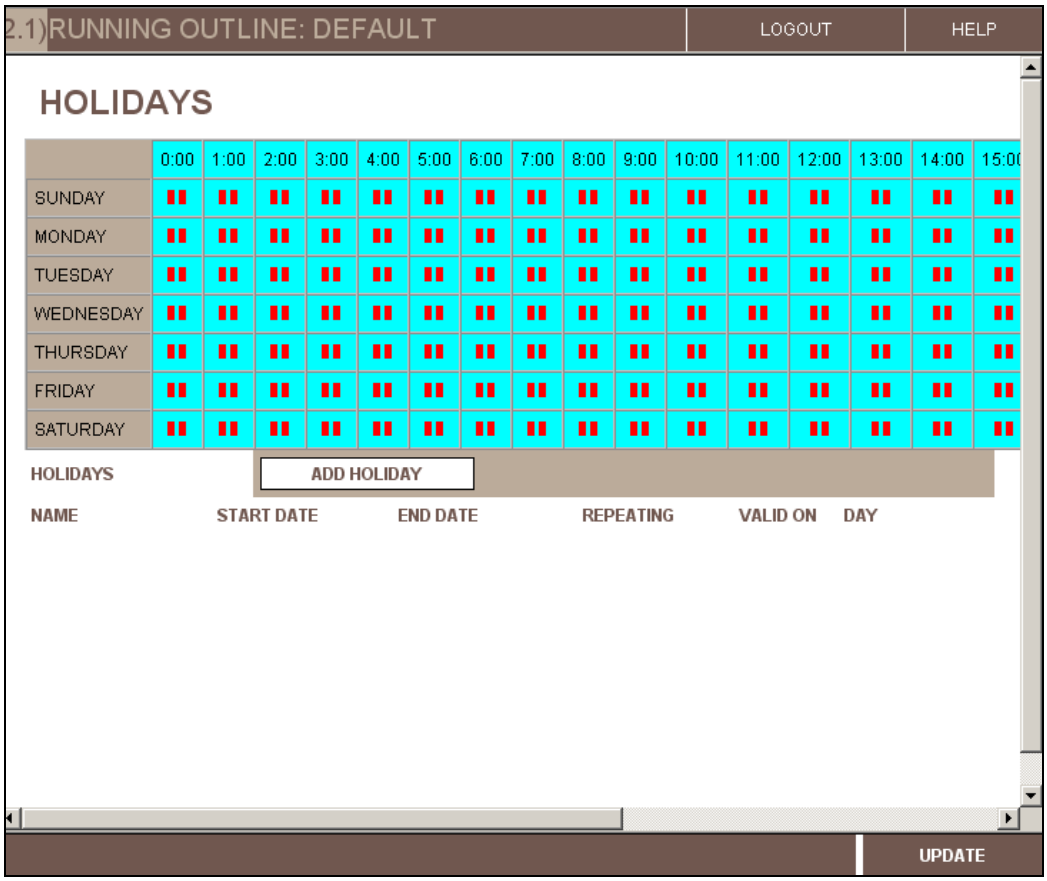


Figure 123: Holidays screen

2. Click **Add Holiday**. A blank **New Holiday** section opens.

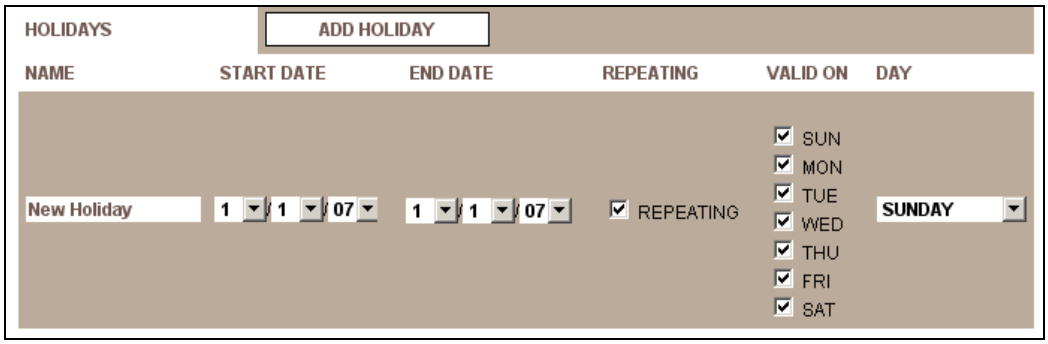


Figure 124: New Holiday section

3. Fill in the fields as follows:

Field	Description
Name	The name of the holiday, e.g., *New Years Day*.
Start Date	The date of the first day of the holiday.
End Date	The date of the last day of the holiday. If the holiday only lasts one day, this is the same as the start date.

Field	Description
Repeating	If the holiday occurs every year on the same date(s), select this checkbox. If the holiday occurs on different dates every year, or is only taking place once, clear this checkbox.
Valid On	The days of the week on which the holiday schedule is applicable. For example, if a Jazz festival is scheduled for all of the Sundays in July, you could select Sunday. The holiday schedule would be implemented only on the Sundays of the month of July.
Day	Select the name of the row in the schedule grid to implement on the holiday. For example, in the Jazz festival scenario, if you select Saturday, the Saturday schedule would be applied on all of the Sundays in July. Note: If none of the existing schedules in the grid are appropriate for the holiday, you can create a new row in the grid, as explained below. (The new row must be added in the **Schedules** screen before it can be selected in the **Holidays** screen; once it is added, you can select it in the **Holidays** screen in this dropdown list.)

4. Click **Update**. The holiday schedule is updated. It will be implemented after you save the changes and restart the system.

5. In the **Main Menu**, click **Schedules**. The **Schedules** screen opens. The holiday you defined appears in the list of holidays at the bottom of the screen.

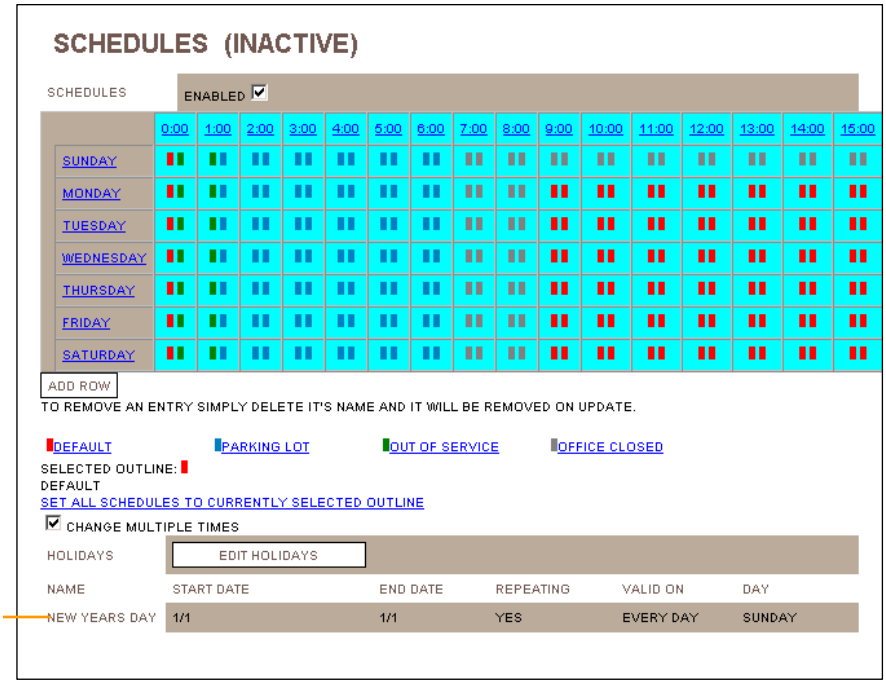


Figure 125: Holiday added to the schedule

Defining a New Schedule Row

In addition to the standard rows for the days of the week, you can create custom schedule rows that can be implemented on holidays. For example, you could create a special row with a schedule that is to be applied only on New Years Day.

➪ *To define a new schedule (row):*

1. In the **Schedules** screen, below the schedule grid, click **Add Row**. A new row is added to the grid.

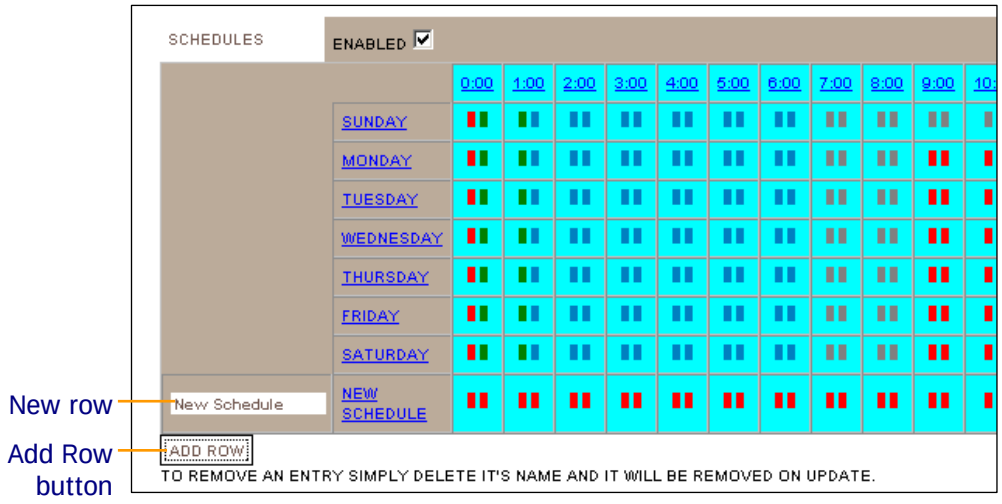


Figure 126: New row in schedule grid

2. In the text field, modify "New Schedule" to define a name for the schedule.

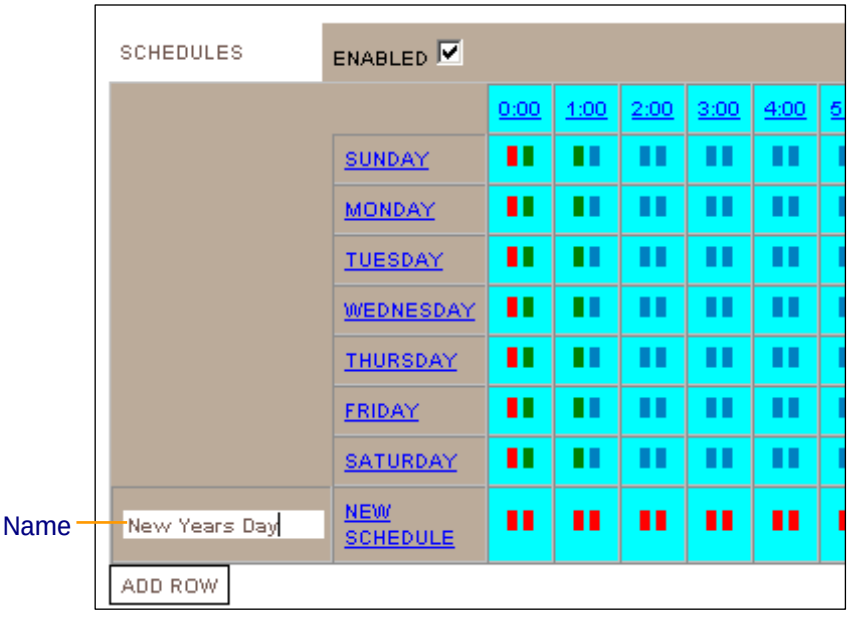


Figure 127: Naming a new row

3. Click **Update**. The name of the row is updated.

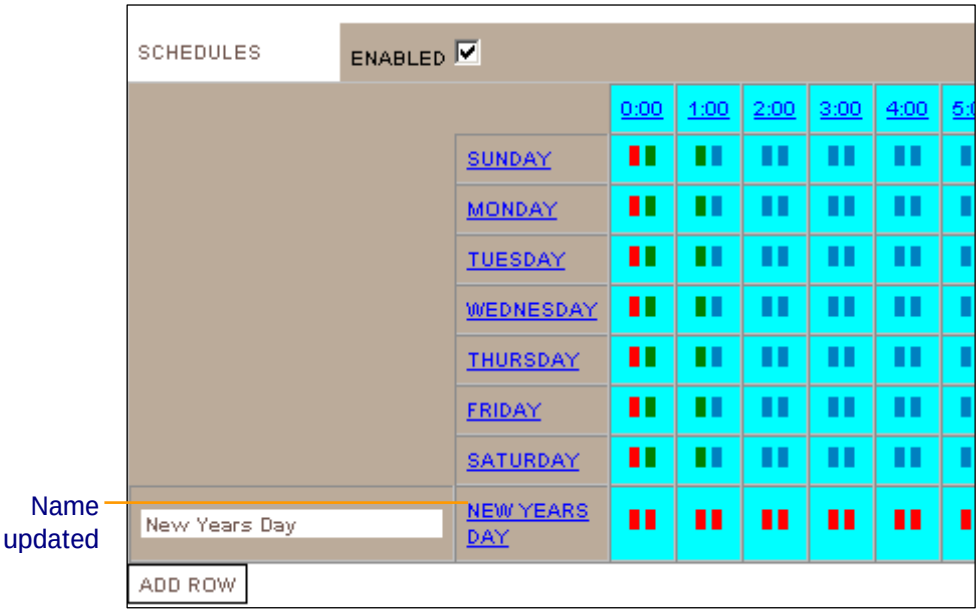


Figure 128: Row name updated

4. Follow the instructions under *Configuring a Standard Weekly Schedule*, page 131 to select the outlines to implement in each time slot.

   Note: To assign the new schedule to a holiday, click **Edit Holidays** to open the **Holidays** screen. Follow the instructions above (see *Defining Holiday Schedules*, page 134) for configuring the holiday. The new schedule appears in the holiday configuration section in the **Day** dropdown list.

Saving Configuration Changes

As you make changes in each screen, you click the **Update** button to save the changes. However, in order to complete the save operation and update the MVG 400, you need to carry out the steps described below. Most configuration changes only take effect after you carry out all of these steps.

NOTE: Changes to Modem, WiFi, Network Priorities, and camera brightness, contrast, and saturation settings are implemented immediately when you click the **Update** button. To save them permanently, the changes must be saved, but restarting the unit is not necessary. All other configuration changes are implemented only after they are saved and the system is restarted.

➪ *To save all changes:*

1. Do one of the following:

   - In the orange *Update Confirmation* message below the **Main Menu**, click "Click here to go to Save Settings page."
   - In the **Main Menu**, under **System**, click **Save Settings**.

   The **Save Settings** screen opens:

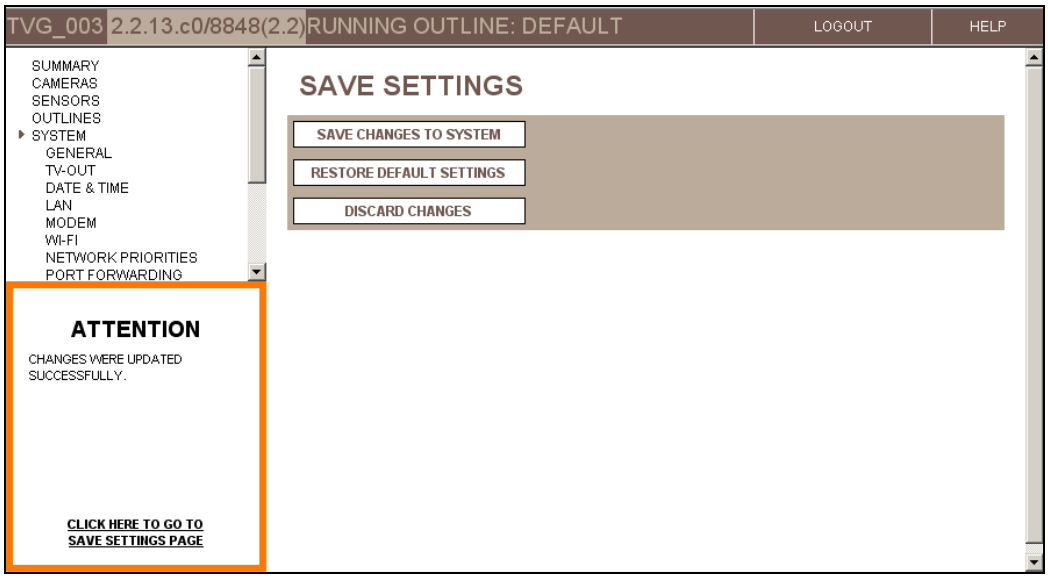


Figure 129: Save Settings screen

2. In the **Save Settings** screen, click **Save Changes to System**. The unit stores the changes permanently, and the **System Restart Page** screen opens:

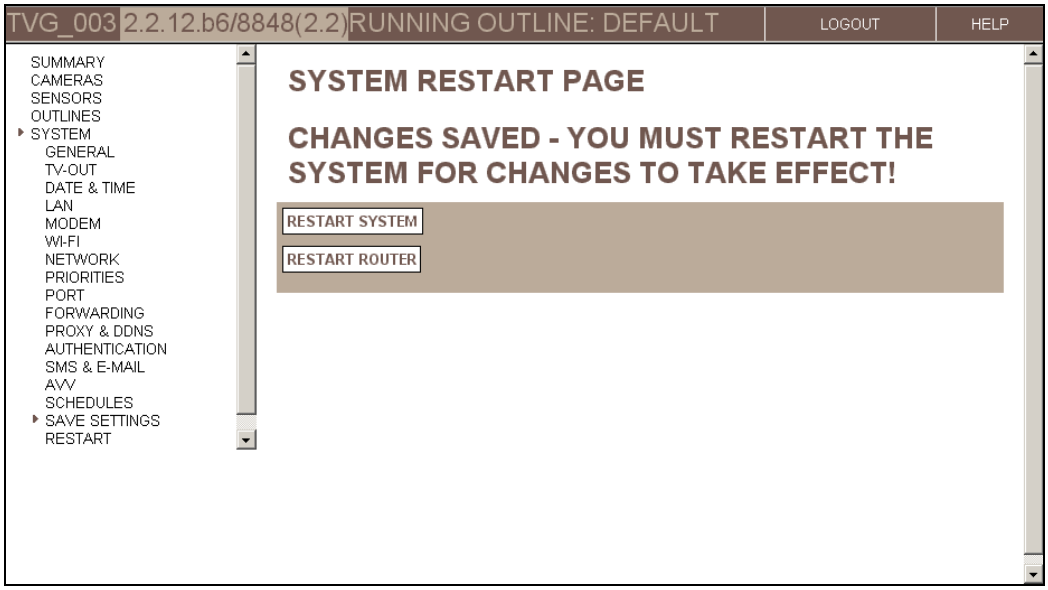


Figure 130: System Restart Page screen

3. Click **Restart System**. The unit restarts, and the changes are implemented. You are automatically logged out of the configuration utility, and a confirmation message appears:

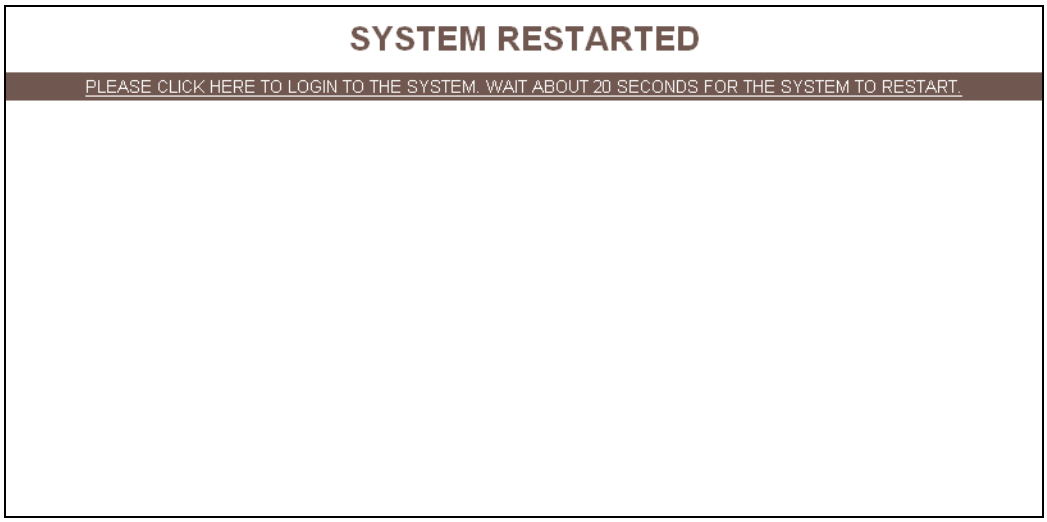


Figure 131: Restart confirmation message

Note: To continue configuring the unit, click the link and log into the configuration utility again.

Note: If you do not restart the unit at this time, most changes are not implemented on the unit, but they are saved on it. The next time the unit is reset, the changes are implemented.

Discarding Changes

Once you have saved a change to the unit's configuration settings in the configuration utility, the change is stored on the unit. When the unit is next restarted, the change is implemented. If the unit has not yet been restarted, you can choose to cancel all configuration changes that were not yet implemented. If you choose this option, the changes are erased from the unit, and are not implemented when the unit restarts.

⇨ *To discard all configuration changes that were saved but were not yet implemented:*

1. In the **Main Menu**, under **System**, click **Save Settings**. The **Save Settings** screen opens.
2. In the **Save Settings** screen, click **Discard Changes**. The changes are canceled, and the **Changes Discarded** screen opens:

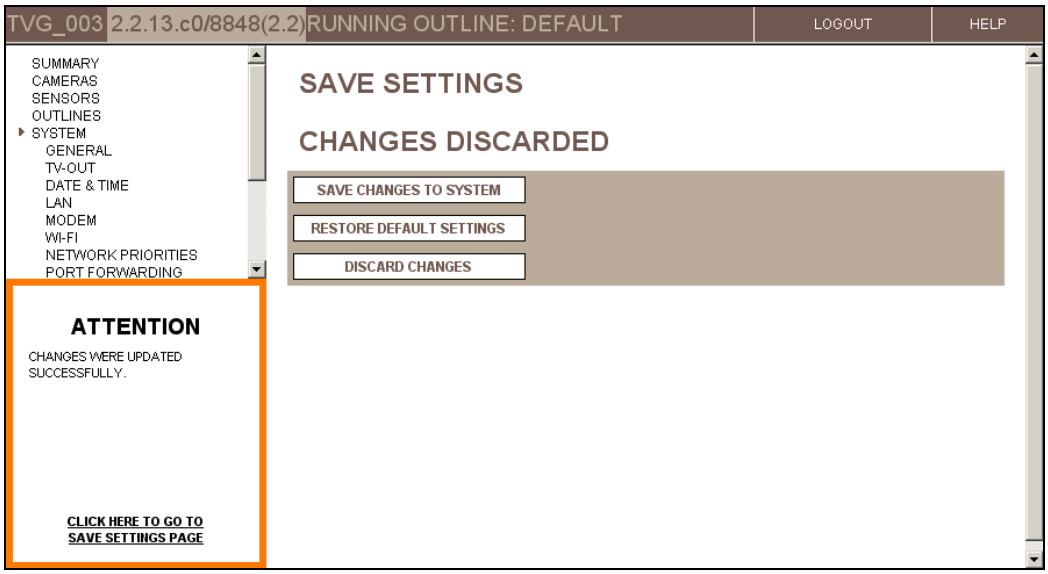


Figure 132: Changes Discarded screen

3. Continue configuring the unit as required.

Restoring Default Settings

If the unit does not function as expected, and you believe this is the result of recent configuration changes, you can choose to restore all of the original factory settings to the unit. You can then configure the unit manually once again, from scratch, as you would if the system was just installed.

NOTE: If recent configuration changes have made it impossible to access the unit through the local network, the factory settings can be restored as described under *Restoring Factory Settings*, page 155.

⇨ *To restore the default settings:*

1. In the **Main Menu**, under **System**, click **Save Settings**. The **Save Settings** screen opens.
2. In the **Save Settings** screen, click **Restore Default Settings**. The **Confirm Restore** screen opens.

Figure 133: Confirm Restore screen

3. Select **Are you sure you want to restore factory defaults?**.

   Note: If you do not select this option, the unit's settings will not be restored, even if you click **Confirm**.

4. If you want to save all the recorded video that is stored on the unit, select **Attempt To Save Recordings?**. Before restoring the factory settings, the system will attempt to save the recorded video on the hard drive. If it succeeds, the video will be available on the unit after the factory settings are restored. The names of the unit and of the cameras recording the video will be lost, however; the cameras will be identified as Camera 1, Camera 2, etc.

   Note: Normally, the video can be saved if two conditions are met: (1) The recordings were all in SIF resolution. (2) The disk space allotted to each camera for storing video recordings matched the default allotment (24% for each camera; see *Advanced Recorder Settings*, page 112).

5. Click **Confirm**. The default factory settings of the unit are restored, and the **System Restart Page** screen opens.

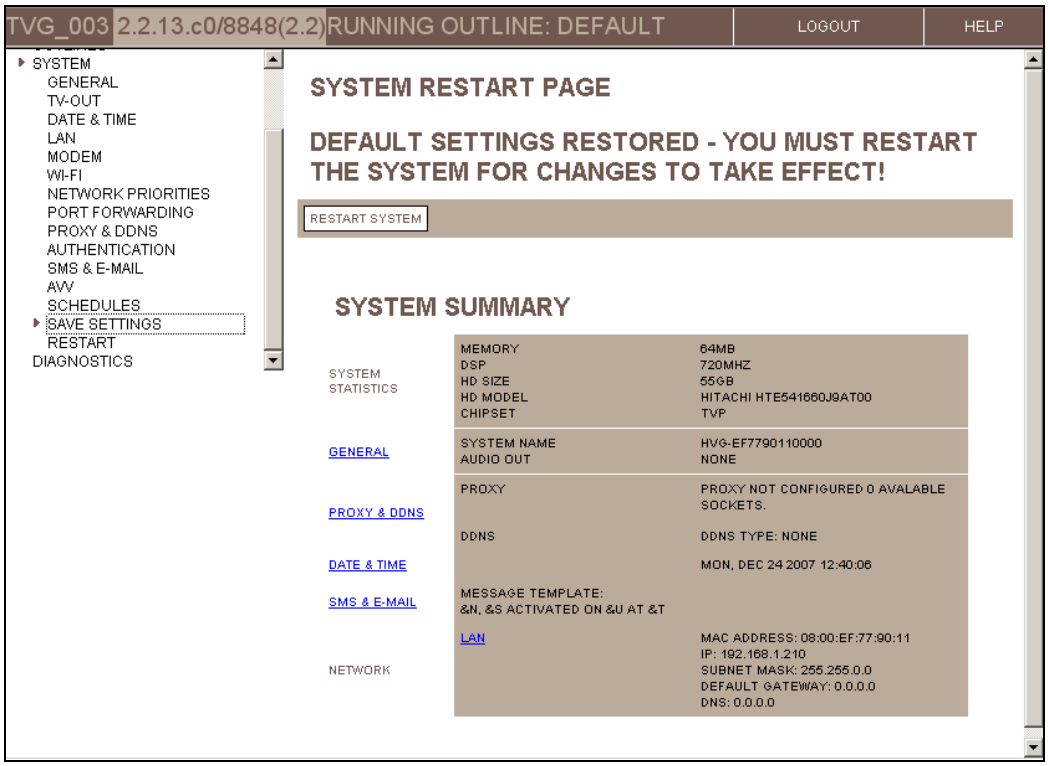


Figure 134: System Restart Page after default settings are restored

6. Click **Restart System**. The unit restarts, and the factory default settings are implemented. You are automatically logged out of the configuration utility, and a confirmation message appears.

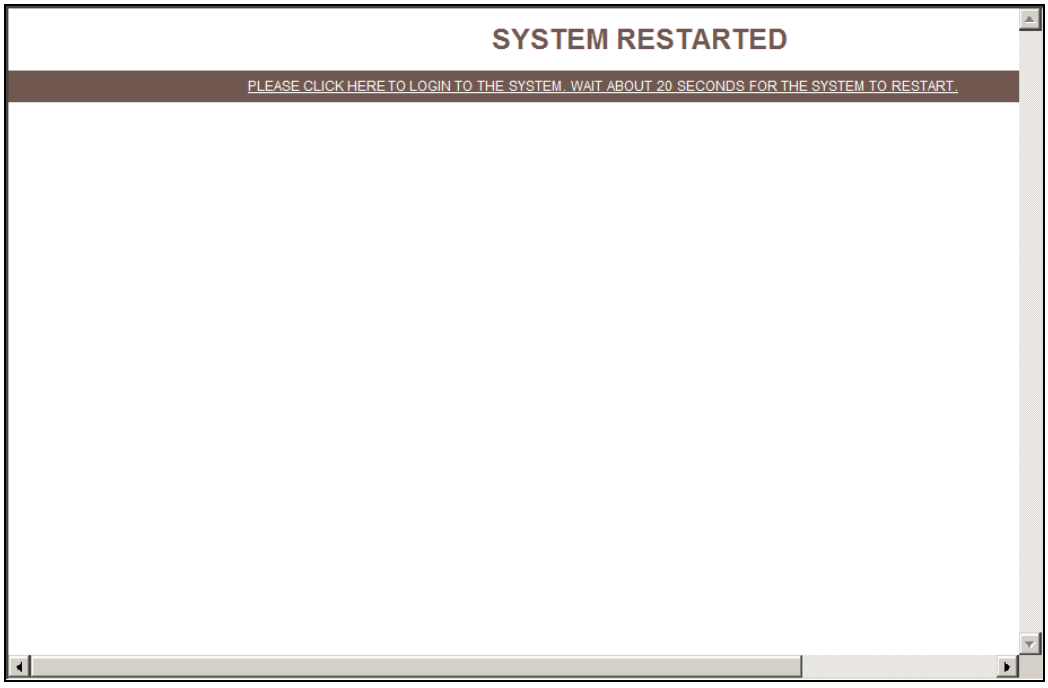


Figure 135: Restart confirmation message

Note: To begin reconfiguring the unit, do one of the following:

- If the primary IP used by the unit before you restored the default settings was the default, factory-configured IP, click the link in the confirmation message to log into the configuration utility and reconfigure it.
- If the primary IP used by the unit before you restored the default settings was different from the default, factory-configured IP, use the MultiClient to search for the unit on the network, and open the unit's configuration utility from the MultiClient (see *Opening the Configuration Utility*, page 37).

Connecting to the MVG 400

Once the system is installed and configured, you can connect to it with a client device. This chapter explains how to connect to the MVG 400 using the MultiClient from a PC that is either on the same LAN as the MVG 400 or connected to the unit by an Ethernet cable. If this is successful, you can then install the **MultiClient** on a remote computer and connect to the MVG 400 via the internet.

NOTE: If the MultiClient is not installed on the PC, see *Installing the MultiClient*, page 33.

NOTE: This chapter explains how to get started using the **MultiClient**, with the **MultiClient** running on a PC that is on the same LAN as the MVG 400, so that you can configure the system and make sure it is working properly. For complete information about connecting to the MultiClient, locally or remotely, and using the MultiClient to view video, monitor events, and control devices, see the *MultiClient User Guide*.

⇨ *To connect to the MVG 400:*

1. Open the MultiClient.
2. In the MultiClient, at the bottom of the **Connection Panel**, click the **Search** button.

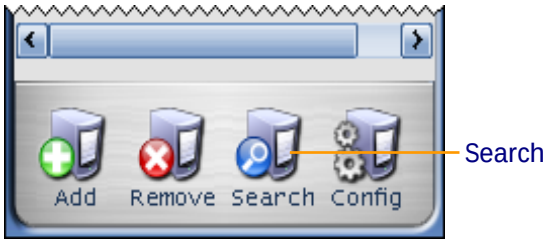


Figure 136: Search button

The **Find Gateway** dialog box opens, and displays a list of all the SerVision systems connected to the network.

Note: If a Microsoft Windows Security Alert dialog box is displayed, click **Unblock**.

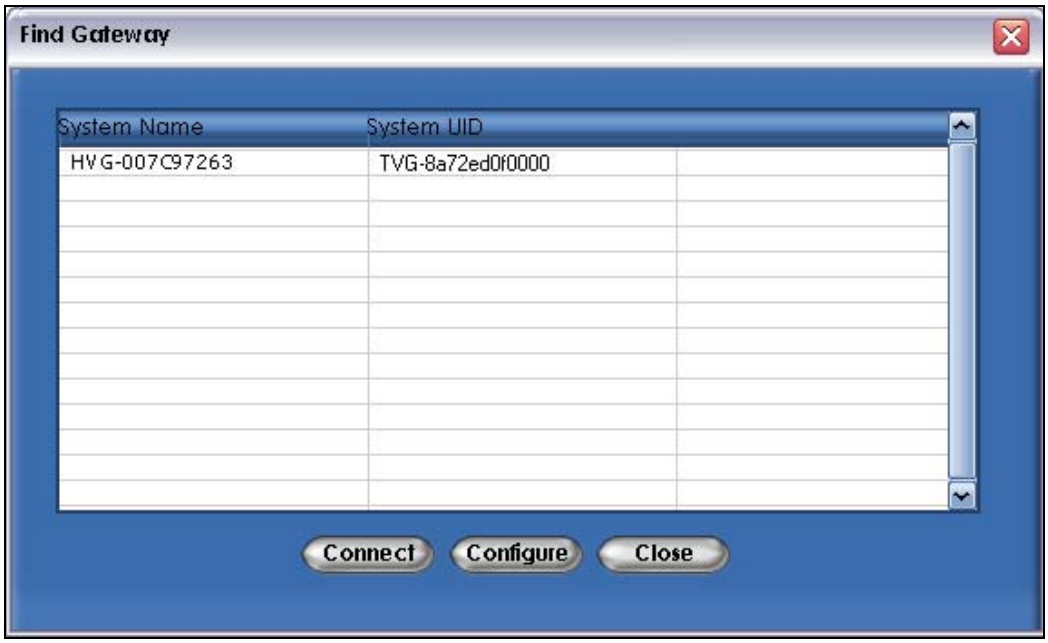


Figure 137: Find Gateway dialog box

3. Select the MVG 400 and then click **Connect**. The **MultiClient** connects to the MVG 400, and the MVG 400 appears in the **Connection Panel**.

4. In the **Connection Panel**, expand the system to display all the devices connected to it.

Office Security(Main Floor)
Entrance Hall (103 events)
Back Door (0 events)
Front door (0 events)
Waiting room (0 events)
Balcony door (0 events)
Office door (0 events)
Front alarm (1 events)
Balcony alarm (0 events)

Figure 138: Expanded system

5. Drag a camera from the **Connection Panel** to one of the camera panes in the **Viewing area**. Live video from the camera is displayed in the camera pane.

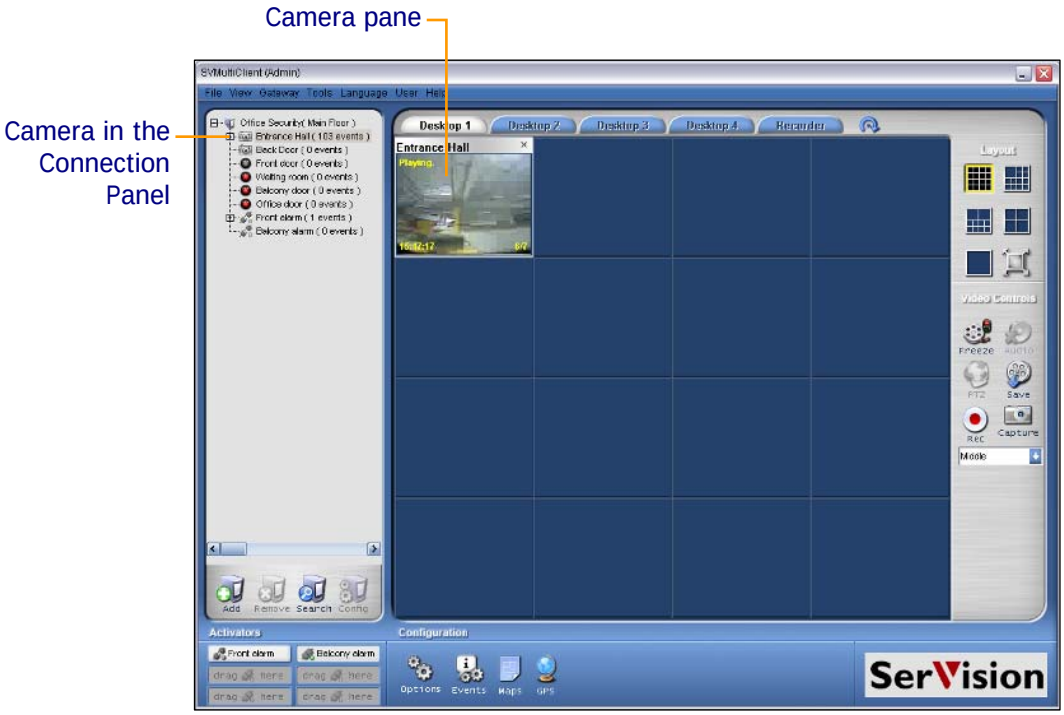


Figure 139: Viewing area

NOTE: The number of video streams (live and/or recorded) that the MVG 400 can supply simultaneously is limited. This limit is based on the system configuration and is due to memory constraints.

Viewing Snapshots in a Browser

The *Snapshot* feature enables you to view live images from cameras without using a client application, through a web browser. This means you can see what is happening on-site wherever you are, as long as you have access to a computer that is connected to the internet – even if you do not have a client device with a SerVision client application available. Video is not supported by this feature, but snapshots can be updated at frequent intervals so that you can receive a continuous flow of snapshots that allows you to clearly see on-site developments as they occur.

Snapshots can be viewed in a web browser by connecting to the unit over the internet. To do this, you must know the public IP address and the port number of the unit. For additional information about the public IP of the gateway, see *Setting Up Network Connections*, page 25. The unit port is configured in the **Port** field of the **General System Settings** configuration screen (see page 47).

Snapshots are transmitted from the MVG 400 to the browser as JPG image files. You can specify the desired image quality during the Snapshot session.

⇨ *To view snapshots in a web browser:*

1. Open a web browser.
2. In the **Address** field of the browser, enter the address in the following format:

   `http://IP:port/snapshot.cgi`

   where the IP is the public IP address of the unit, and the port is the port number of the unit.

   For example, if the unit's public IP address is 245.118.69.165 and you are connecting on port 9988, enter `http://245.118.69.165:9988/snapshot.cgi`, as in figure 140:

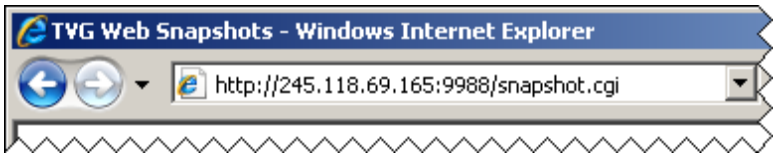


Figure 140: Address for viewing live snapshots

The snapshot login screen opens:

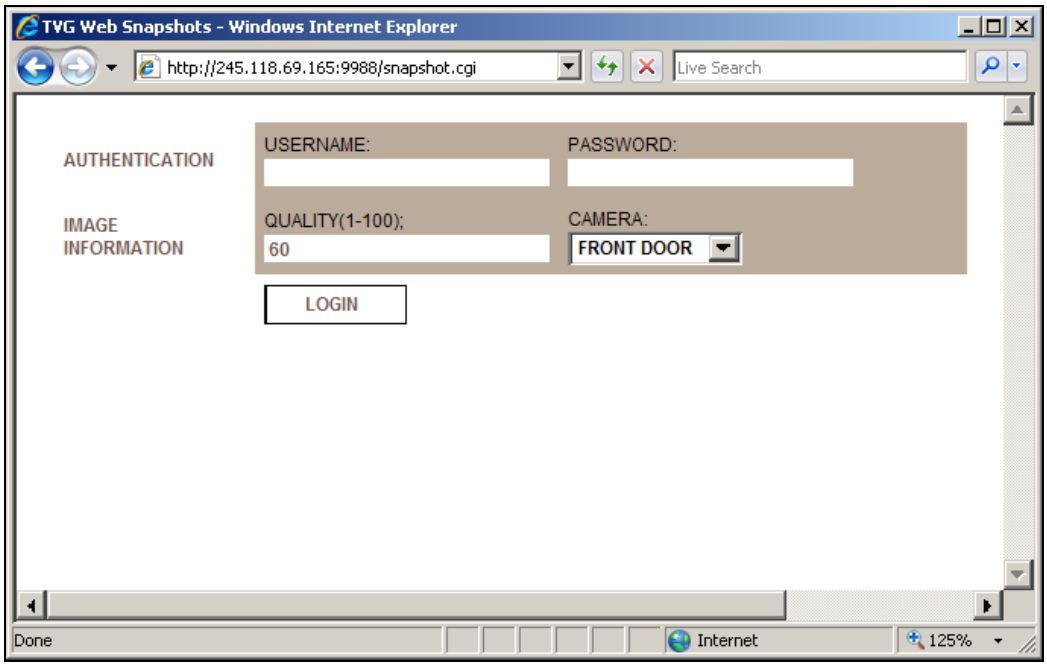


Figure 141: Snapshot login screen

3. Under **Authentication**, fill in the username and password used for *client* access to the MVG 400 unit.

   Note: If client authentication is anonymous, the username is **anonymous** and the password is **guest**. For additional information, see *Authentication*, page 80.

4. Under **Image Information**, fill in the fields as follows:

Field	Description
Quality	Enter the desired snapshot image quality, as a value from 1 through 100. **Note:** The higher the quality, the larger the JPEG image file that is created, and the longer it takes to transfer it to the web browser. A quality setting of 60 is recommended; this settings is equivalent to the quality of the images you receive when viewing a video stream at 10 fps / 128 kbs.
Camera	Select the camera from which you want to view snapshots. Note: You can switch to other cameras during the session.

5. Click **Login**. The **Snapshot Viewer** opens in the browser, with the current field of view of the selected camera displayed.

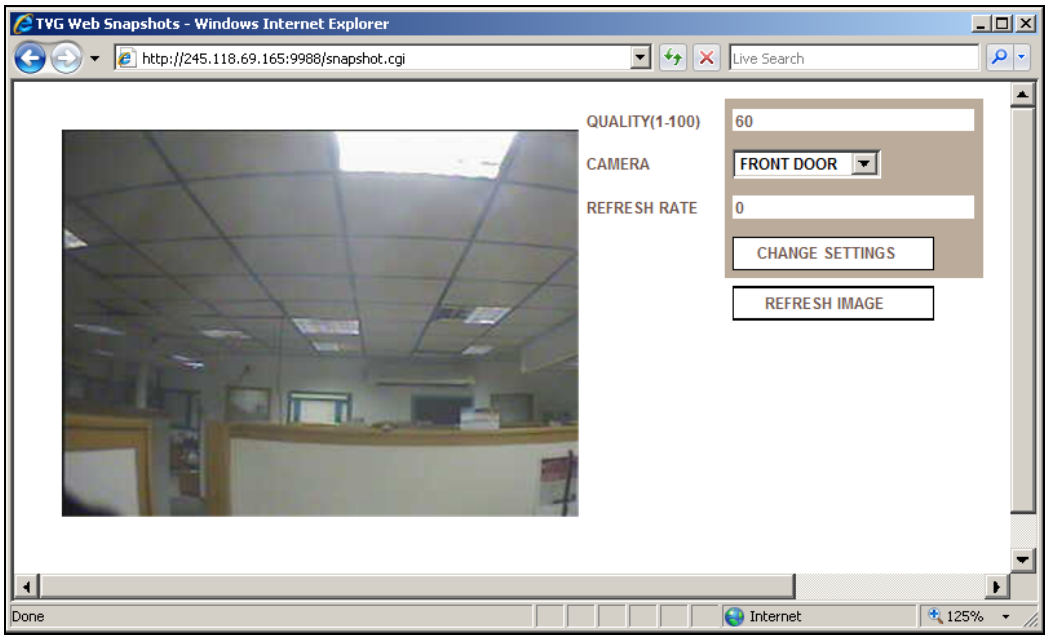


Figure 142: Snapshot Viewer

When the **Snapshot Viewer** is open, you can change its settings as required. For example, you can select a different camera, or choose to have the snapshot refreshed at specified intervals. You can also refresh the snapshot manually whenever you wish.

⇨ *To change the Snapshot Viewer settings:*

1. In the **Snapshot Viewer**, change any of the settings by modifying the fields as follows:

Field	Description
Quality	Modify the snapshot image quality, to any value from 1 through 100.
Camera	Select a different camera from which to view snapshots.
Refresh Rate	If you want the snapshot to be updated automatically, specify how often you want the updates to occur, in seconds. Note: A refresh rate of “0” means the snapshot is not updated automatically.

2. Click **Change Settings**. The new settings are implemented.

⇨ *To manually refresh the snapshot:*

- Click **Refresh Image**.

Viewing Video on a CCTV Monitor (TV-Out)

If a CCTV monitor is connected to your MVG 400, you can view video on it. Live video can be displayed on the monitor in one of the following ways:

- Full-screen display of live video from one of the cameras
- Full-screen display of live video that loops from one camera to the next at specified intervals
- Split-screen display of live video from all of the cameras

Figure 143: Split-screen displays video from all cameras simultaneously

Figure 144: Full-screen display

The default display is defined in the unit's configuration (see *Configuring a CCTV Monitor (TV-Out)*, page 54). If a switch is connected to the Sensor 4 connector on the rear panel of the unit, you can use the switch to cycle through the various available display types (see *Sensor and Activator Settings*, page 115). Otherwise, the default display is always used.

NOTE: In order for the monitor to work, TV-Out must be activated in the unit's configuration. For additional information, see *Configuring a CCTV Monitor (TV-Out)*, page 54.

When the MVG 400 unit starts up, the monitor displays a startup screen containing the name of the unit, the IP address `0.0.0.0`, the net mask, the firmware version, and a video pane displaying live video from one of the cameras connected to the unit. After a few seconds, this display is replaced by the default video display.

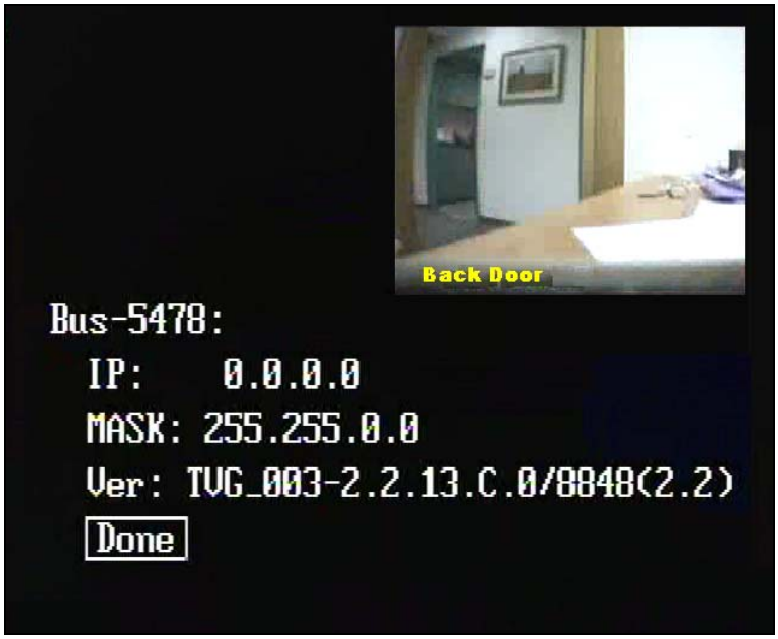


Figure 145: Startup screen

NOTE: The IP `0.0.0.0` is displayed because the unit's internal DHCP server has not yet assigned an IP address to the unit. You can see the correct IP address in the configuration utility on the **Port Forwarding** page (see *Port Forwarding*, page 74). Note that this is the IP address of the video gateway component of the unit in the local network managed by the unit's router.

NOTE: If the unit is configured to connect to an external LAN using DHCP (see *LAN Settings*, page 63), `[DHCP]` appears after the `0.0.0.0` in the **IP** field.

Resetting the Unit

You can reset the unit at any time. Resetting the unit may help if video streaming is unreliable or frequently interrupted. If changes were made to the configuration of the unit (see *Configuring the MVG 400*, page 36), and the changes were saved on the unit, but the unit was not reset afterwards, the changes are implemented when the unit is reset.

The unit can be reset in one of three ways:

- **Software:** Selecting **Restart** in the configuration utility, as described below
- **Reset button:** Pressing the **Reset** button located on the back of the unit (use a pin or similar implement to press the button)
- **Power Reset:** Unplugging the unit from the power and then plugging it in again

If the unit cannot be accessed through the local network, you can restore its factory settings and then access the unit as described under *Opening the Configuration Utility*, on page 37.

⇨ *To reset the unit using the configuration utility:*

1. Log into the configuration utility (see *Opening the Configuration Utility*, page 37).
2. In the **Main Menu**, under **System**, click **Restart**. The **System Restart Page** opens:

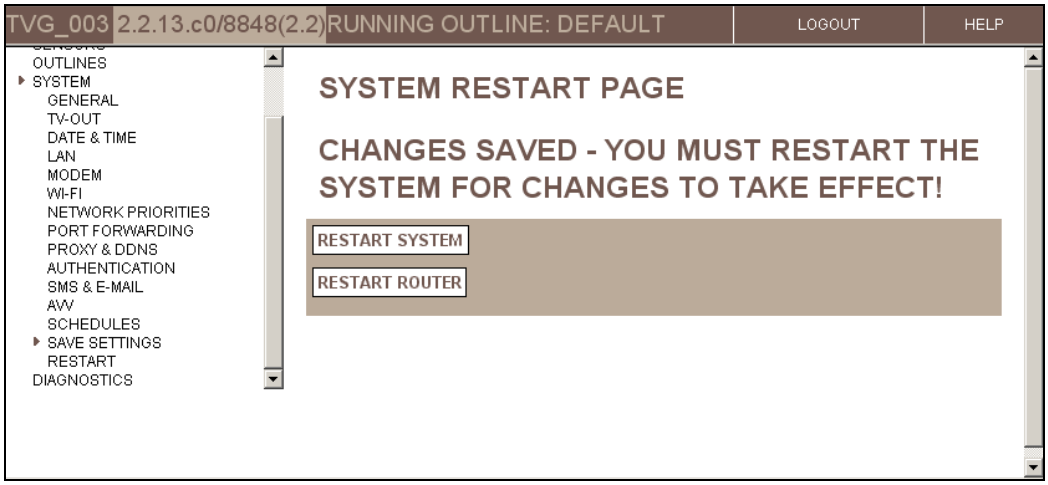


Figure 146: System Restart Page

3. Click **Restart System**. The unit restarts. You are automatically logged out of the configuration utility, and a confirmation message appears:

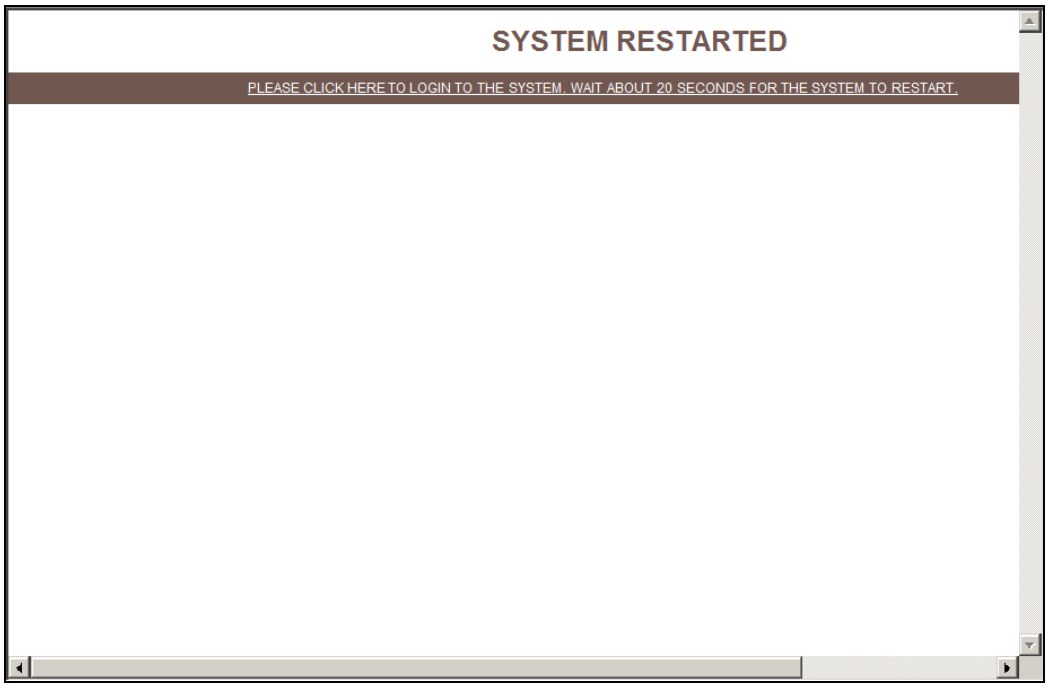


Figure 147: Restart confirmation message

Restoring Factory Settings

If certain configuration settings are set incorrectly, or you forget their values, it may be impossible to connect to the MVG 400 unit. For example, if you forget the username and password required for configuring the unit, you will not be able to access the configuration utility.

In this case, you can force all the configuration settings to be reset to their default values. When you do this, the unit's IP and port are reset to the IP and port that appear on the sticker on the underside of the unit (usually, the IP is 192.168.1.210 and the port is 9988), the username and password required for access to the configuration utility are reset to **svuser** and **servconf** respectively, and all other settings are reset to their original values. In addition, all recorded video on the MVG 400 unit is erased.

Restoring the factory settings is accomplished by shorting two of the pins of the RS232/485 serial port connector together. To perform this procedure, it is best to use a jumper. Jumpers are available at any electronics supply store.

Figure 148: Jumper

⇨ *To reset the configuration settings to their factory values:*

1. Disconnect the unit's power.
2. If anything is plugged into the RS232/485 connector (e.g., a PTZ camera controller or the supplied RS232/485 adaptor), disconnect it from the port.

3. Place the jumper on pins 2 and 3 of the RS232/485 connector.

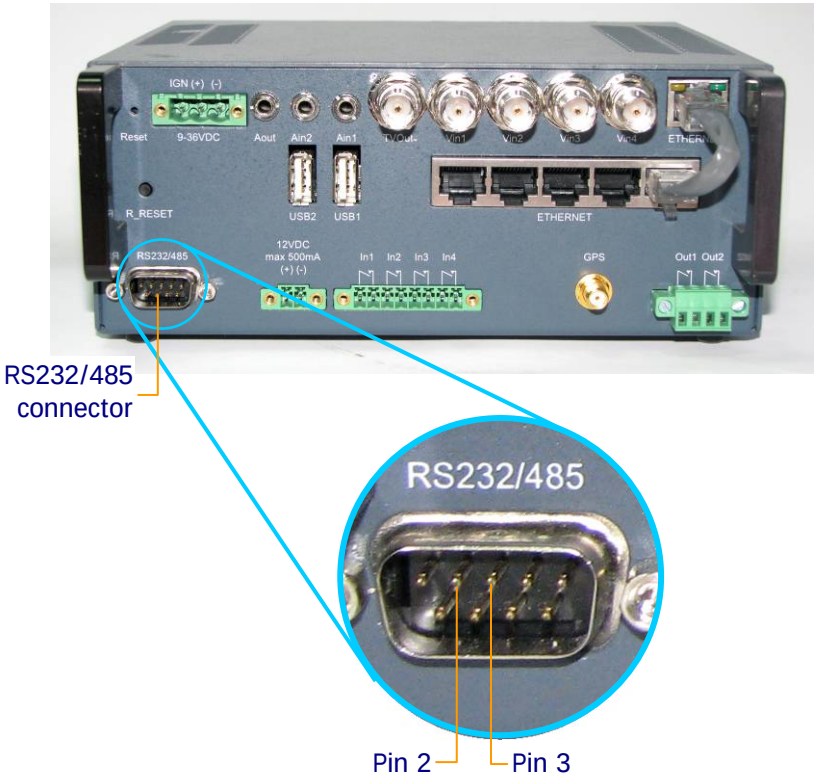


Figure 149: Connectors for shorting activators and sensors

Figure 150: Jumper connected to pins 2 and 3

4. Reconnect the power to the unit. When the startup process is completed (the **Power** LED on the front of the unit flashes at frequent intervals), the default factory settings are restored.
5. Disconnect the power from the unit again.
6. Remove the jumper from the RS232/485 connector.
7. If you disconnected a PTZ controller before performing this procedure, reconnect the controller.
8. Reconnect the power to the unit.

Erasing Recorded Video

Recorded video is normally stored on the hard drive until one of the following occurs:

- The video is over-written by newer video.

- You change the recording size or disk allocation settings of one of the cameras (see *Advanced Recorder Settings*, page 112).

You can also erase all recorded video from the hard drive manually in one of the following ways:

- Erase all recorded video from a selected camera
- Erase all recorded video from all cameras but leave the current disk allocation unchanged
- Erase all recorded video from all cameras and reset the disk allocation to its default settings

Erasing All Recorded Video from a Camera

You can choose to erase all the recorded video from a selected camera that is stored on the unit's hard drive. This is particularly useful if you have chosen to record linearly (selected **Write Protect** in the camera's advanced recorder settings) and the disk space allocated to the camera is full.

⇨ *To erase all recorded video from a camera:*

1. In the **Camera Summary** screen, in the **Recorder** column, click **Erase** in the camera's row.

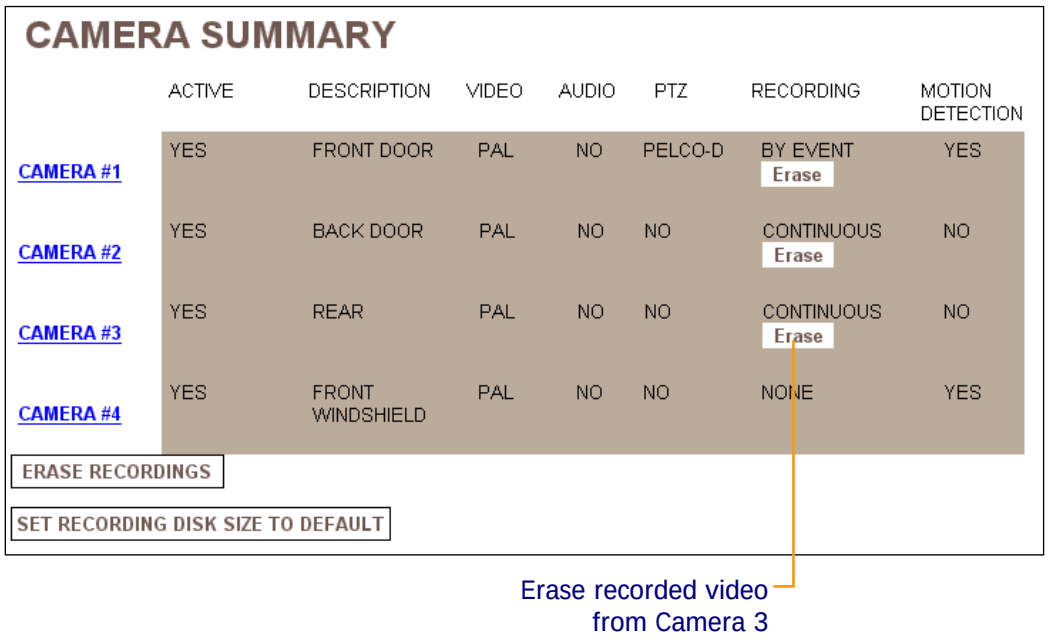


Figure 151: Erasing video from a camera

2. You are prompted to confirm that you want to erase the video:

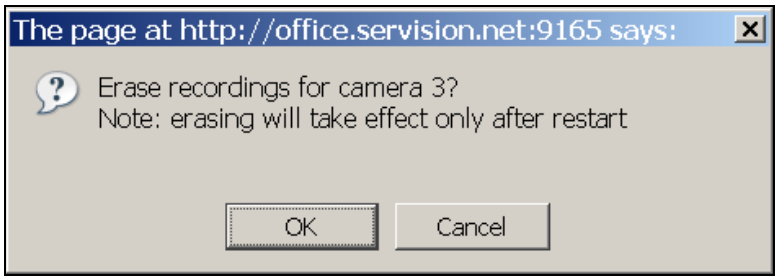

The page at http://office.servision.net:9165 says:
Erase recordings for camera 3?
Note: erasing will take effect only after restart
OK
Cancel

Figure 152: Confirmation prompt

3. Click **OK**. The recordings are erased, and a confirmation message appears below the **Main Menu**.

Figure 153: Confirmation that recordings were erased

4. Restart the unit.

   Note: No recording will take place from the camera until the unit is restarted (see *Resetting the Unit*, page 154).

Erasing All Recorded Video from the Hard Drive

This section explains how to erase all recorded video from the unit's hard drive without changing the disk space allocated to each recorder.

⇨ *To erase all recorded video from the unit's hard drive:*

1. In the **Camera Summary** screen, click **Erase Recordings**. The **Erase Recordings** screen appears.

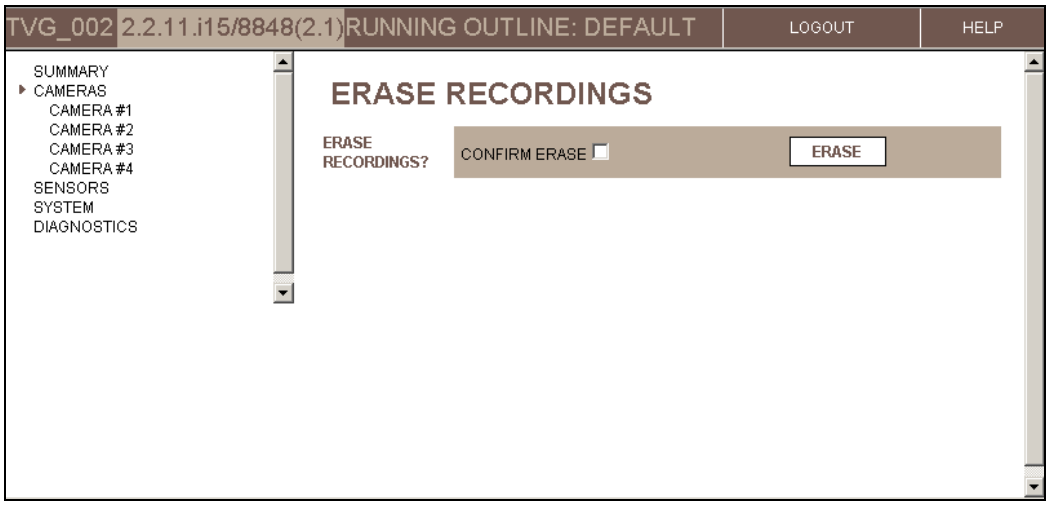


Figure 154: Erase Recordings

2. Select **Confirm Erase**, and then click **Erase**. The contents of the hard drive are erased, and a **System Restart** screen is displayed.

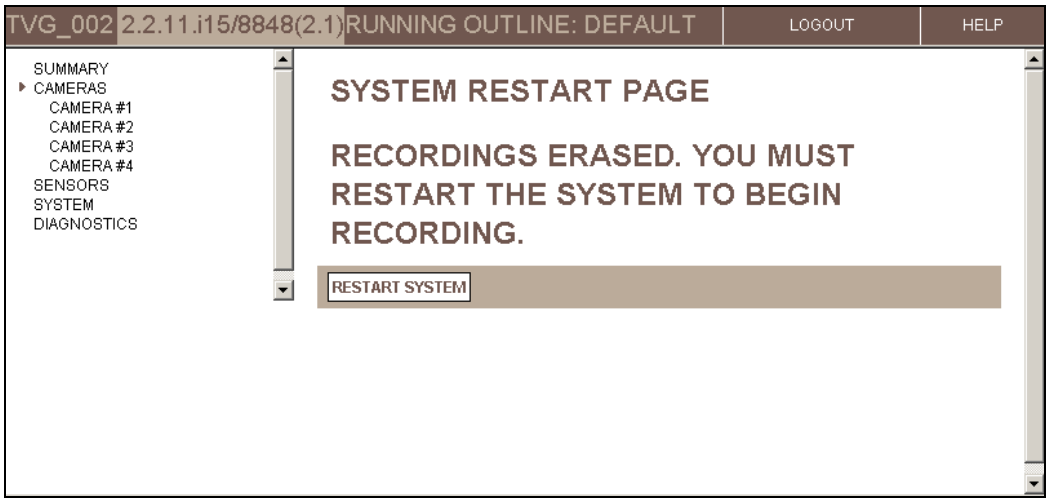


Figure 155: System Restart screen after recordings are erased

Restoring the Default Disk Allocation

This section explains how to erase all recorded video from the unit's hard drive and, at the same time, restore the disk space allocation to its default settings.

1. In the **Camera Summary** screen, click **Set Recording Disk Size to Default**.

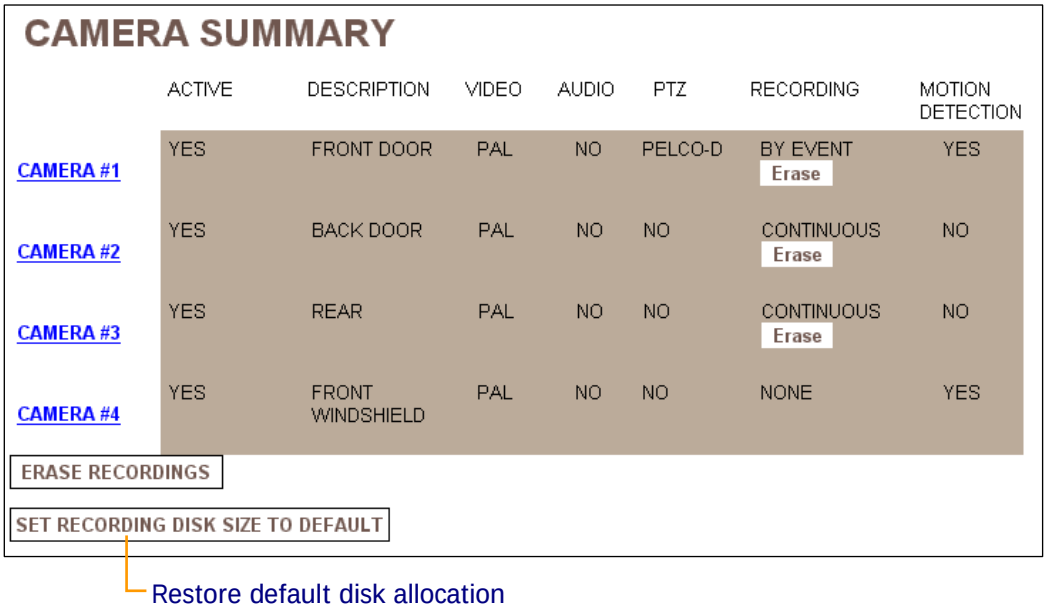


Figure 156: Restoring default disk allocation

You are prompted to confirm that you want to erase all the recordings and restore the disk allocation:

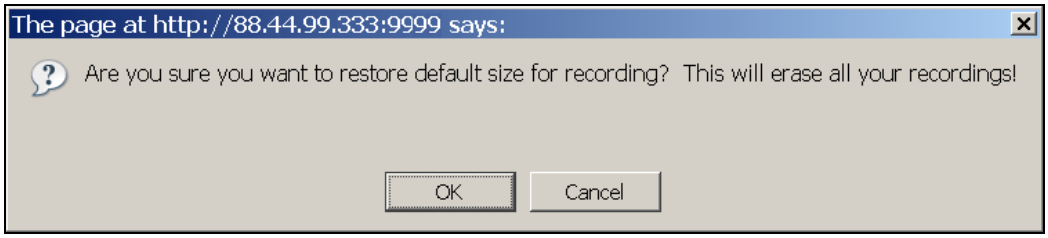

The page at http://88.44.99.333:9999 says:
Are you sure you want to restore default size for recording? This will erase all your recordings!
OK
Cancel

Figure 157: Confirm disk reallocation prompt

2. Click **OK**. An *Update Confirmation* (ATTENTION) message appears below the **Main Menu**.

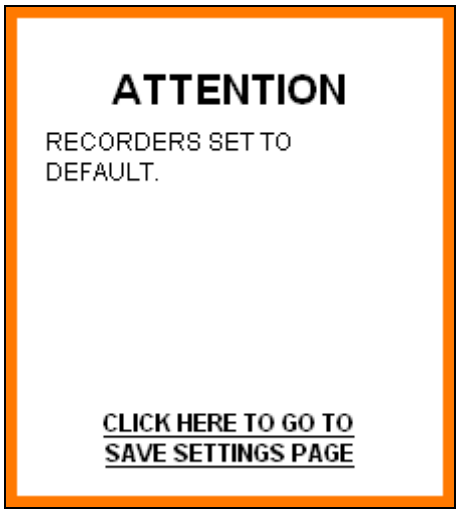


Figure 158: Update Confirmation message

3. Click “Click here to go to Save Settings page.” The Save Settings page opens, with a warning message displayed:

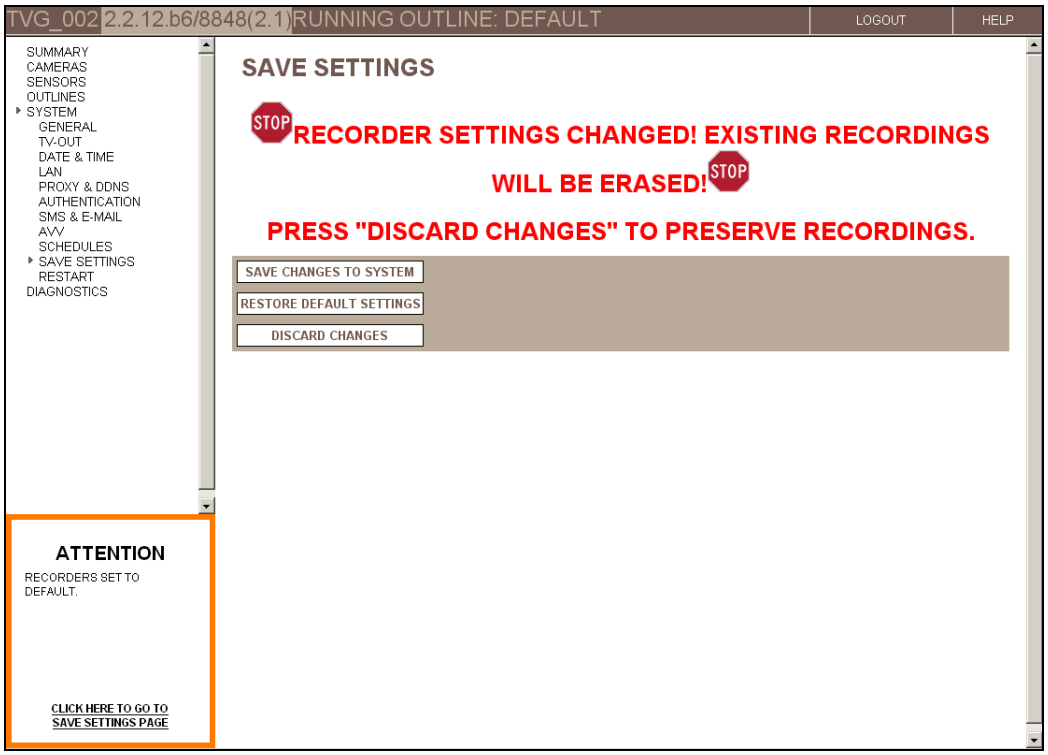


Figure 159: Warning message in Save Settings page

4. Click **Save Changes to System**. The default disk allocation is restored, and the **System Restart Page** screen opens:

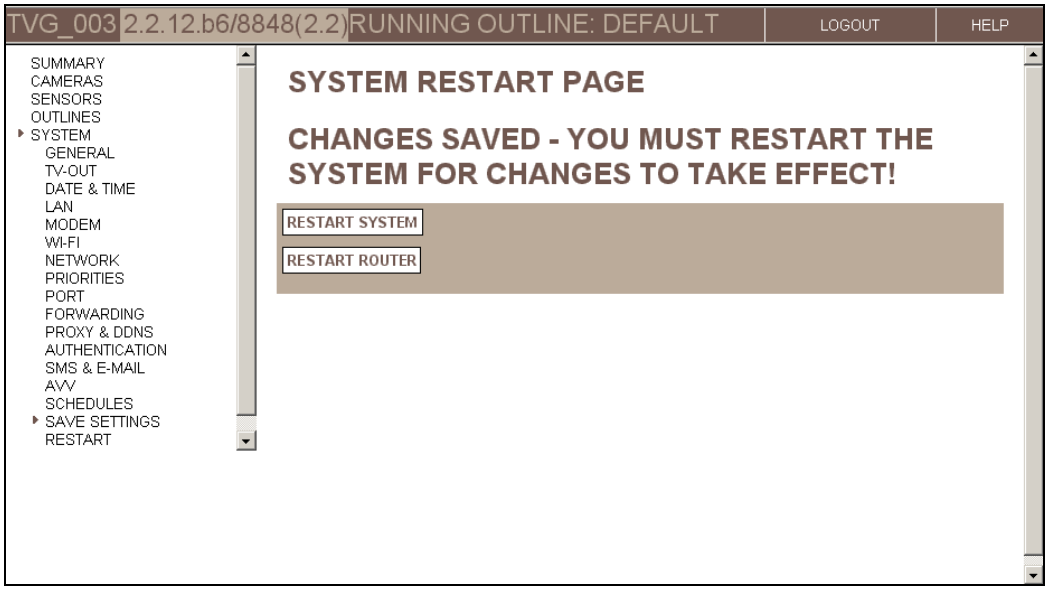


Figure 160: System Restart Page screen

Note: From the time you click **Save Changes to System,** the existing video recordings become inaccessible. No additional recording can take place until the unit is restarted.

5. Click **Restart System**. The existing video recordings are erased, and the unit restarts. After the unit restarts, recording begins again.

Upgrading the Firmware

From time to time, SerVision releases new firmware versions for the MVG 400. Firmware for the video gateway component of the unit is distinct from firmware for the router component of the unit, and updates are released for each at different times.

Upgrading Video Gateway Firmware

This section explains how to obtain and install new MVG 400 firmware. New firmware can be installed on-site or remotely. It is recommended to install it on-site whenever possible. If your distributor has a **TVG Upload Server** to which you can connect, you can upgrade the firmware using the configuration utility. Otherwise, you must download the firmware from the SerVision website and use the **TVG Download Utility** to download it to the MVG 400 .

NOTE: Upgrading the firmware does not change any of the unit's settings.

CAUTION: If the download process is interrupted in any way before it is completed, or if an incompatible firmware version is loaded, it may be impossible to connect to the unit in the normal way again. Make sure that you know in advance that you are loading the right firmware, and DO NOT INTERRUPT THE DOWNLOAD PROCESS once it is started.

If it nevertheless becomes impossible to connect to the unit after an attempt to upgrade the firmware, the *Catch Boot* option can be used to reconnect to the unit and download the firmware to it again. See *Catch Boot Option*, page 168.

Upgrading Firmware via a TVG Upload Server

If your distributor has a **TVG Upload Server** to which you can connect, you can upgrade the firmware using the configuration utility. Before you begin, ask your distributor for the IP address or hostname of the server and its port.

⇨ *To upgrade the video gateway firmware from a TVG Upload Server:*

1. In the **Main Menu**, click **Diagnostics**, and then click **Upgrade Software**. The **System Upgrade** screen opens:

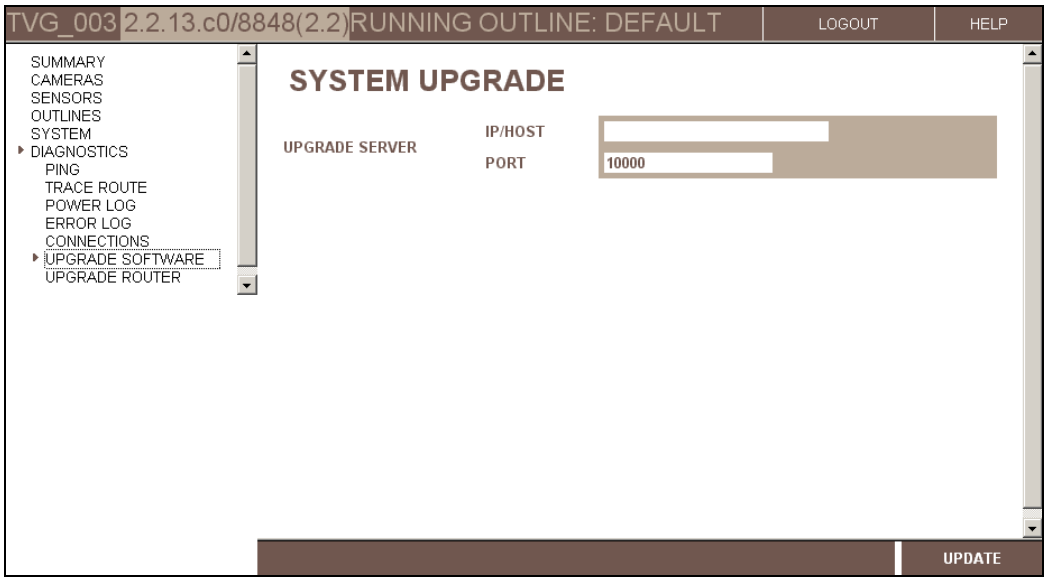


Figure 161: System Upgrade screen

2. Fill in the fields as follows:
   - IP/Host: The IP address or hostname of the **TVG Upload Server**
   - Port: The port of the **TVG Upload Server**
3. Click **Update**. The unit connects to the server, and receives a list of available firmware versions from it. It displays the list in the screen.

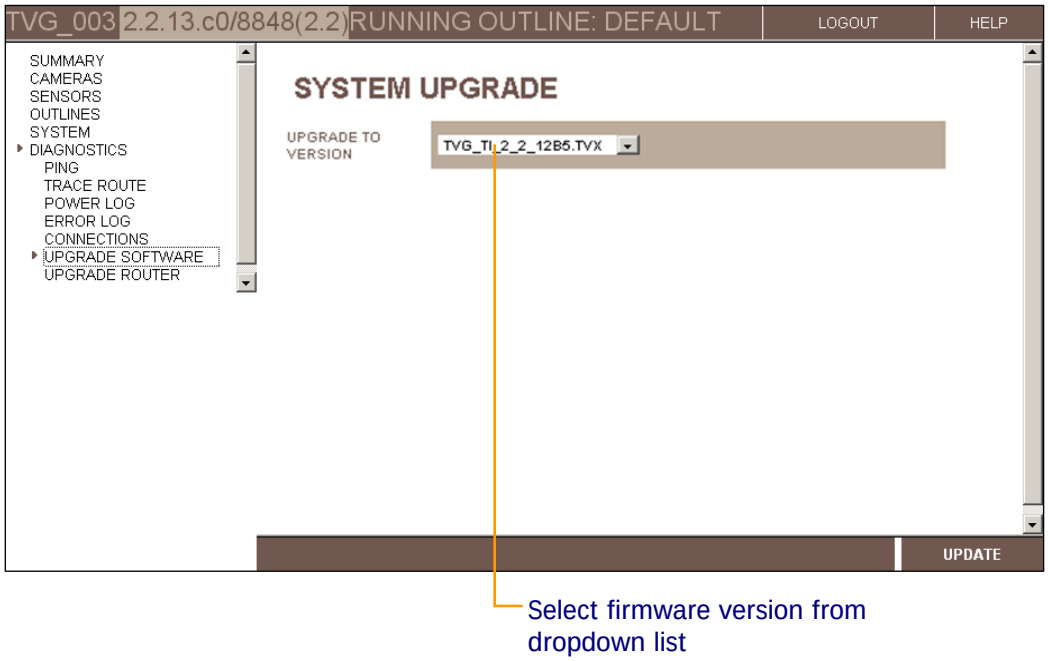


Figure 162: Available firmware versions

4. Select the required version from the list, and then click **Update**. The update process begins. A progress log is displayed.

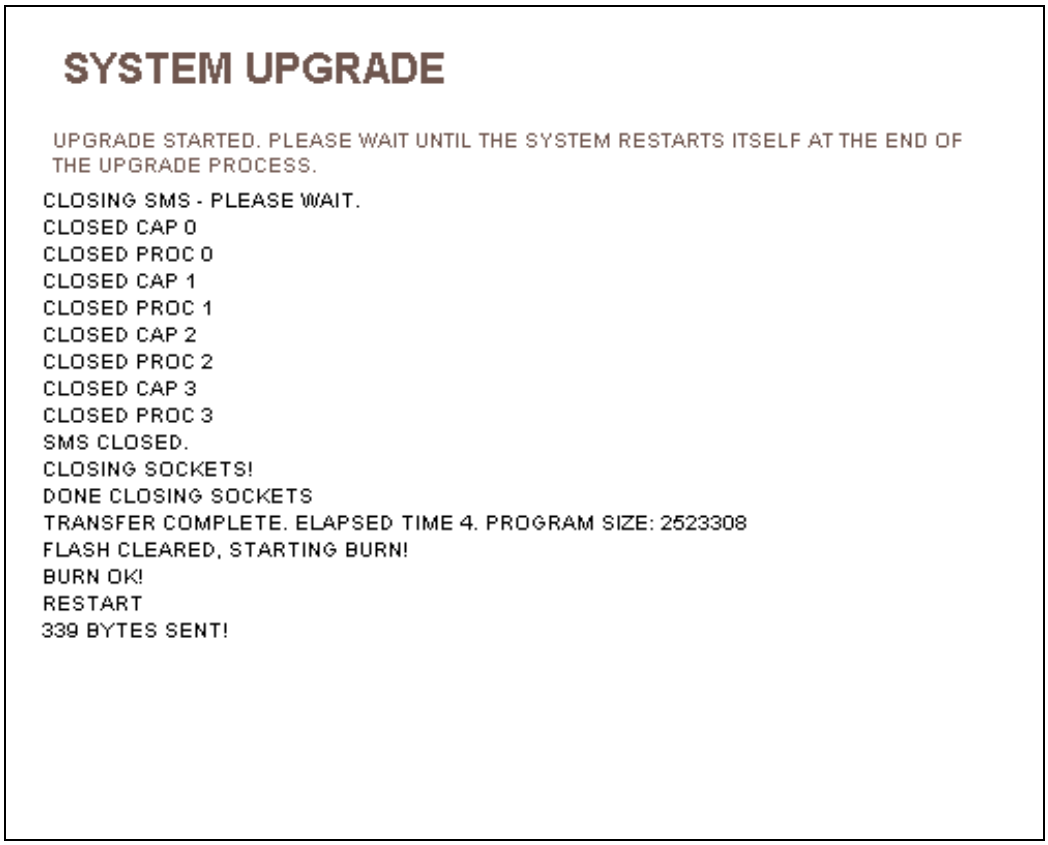


Figure 163: Log of the upgrade process

When the process is complete, you are logged out of the configuration utility. Log in again to continue configuring the unit.

Upgrading Firmware via the TVG Download Utility

If your distributor does not offer direct downloading of firmware updates via a **TVG Upload Server**, you must download the required files and install them as explained in this section. In addition, the Catch Boot option can only be implemented using the method described below.

Required Files

To upgrade the firmware, you need the following files:

- The **HVG/MVG/IPC Download Utility**: `TVG_download.exe`
- A DLL file required by the Download Utility: `PCOMM.dll`
- The firmware file to install on to the MVG 400 unit; the file has a `TVX` file extension (for example, `tvg_2_2_10a3.tvx`)

You can download the latest versions of these files from the SerVision website (http://www.servision.net). Be sure to save the Download Utility and the DLL file in the same folder. The firmware file can be saved in any location on your PC.

Downloading the Firmware to the Unit

The new firmware can be downloaded to the MVG 400 from a computer that is connected to the unit through a LAN, via a cross cable, or over the internet. However, because of potential

communication problems when using the internet, it is recommended to download through the LAN or cross cable whenever possible.

⇨ *To download the firmware to the unit:*

1. Double-click the TVG_`download.exe` file. The **HVG/MVG/IPC Download Utility** opens:

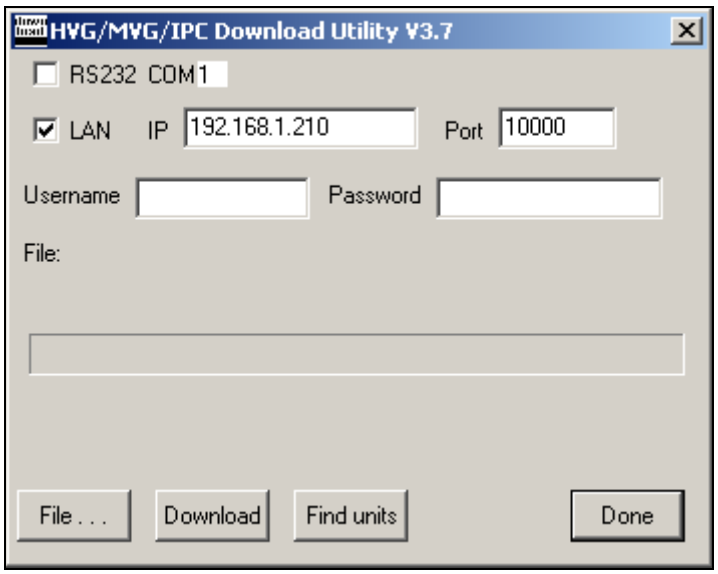


Figure 164: HVG Download Utility

Note: The version number of the Download Utility appears in the title bar.

2. Select **LAN**.
3. In the **IP** and **Port** fields, enter the IP address and port of the unit in one of the following ways:
   - Manually enter the values.
   - If the TVG unit is on the same local network as the PC, click **Find units**. The opens and lists all of the TVG units on the network. Select the relevant TVG and then click **Select**. The **IP** and **Port** fields are filled in.

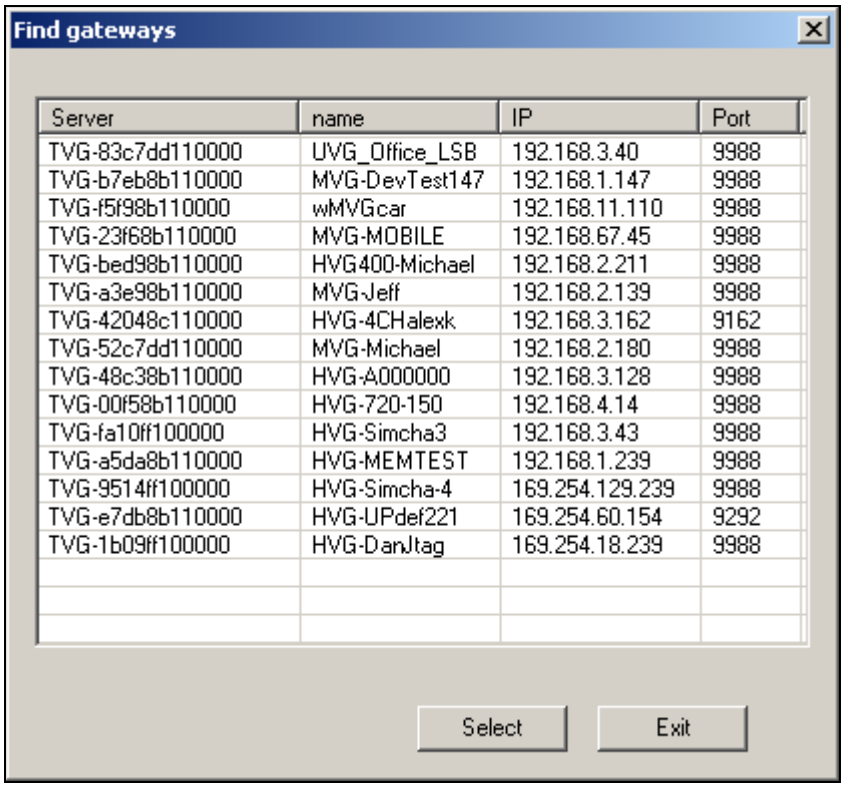


Figure 165: List of TVGs on the local network

Note: If the unit has just started up, it may not appear until its boot process is completed. In this case, click **Exit** to close the **Find gateways** dialog box, wait a minute, and then open the **Find gateways** dialog box again.

4. In the upper-right corner of the **HVG/MVG/IPC Download Utility**, make sure the **Login** checkbox is selected, and then enter the **User name** and **Password** you use to access the configuration utility of the unit.

5. Click the **File** button at the bottom of the dialog box. A file selection dialog box opens.

6. Browse to the TVX firmware file that you downloaded, and then click **OK**.

   The file name appears in the window.

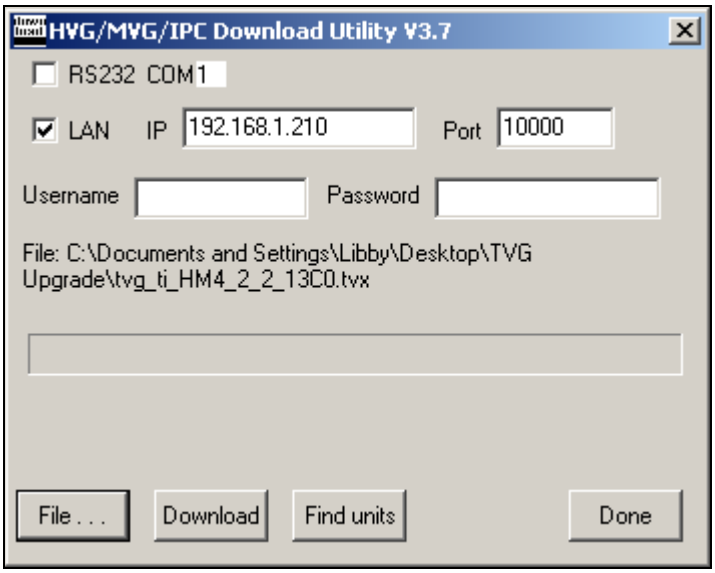


Figure 166: Download Utility with firmware file selected

7. Click **Download**.

   Download progress is indicated in the progress bar in the lower portion of the **HVG/MVG/IPC Download Utility**. The process begins with an integrity check that ensures the file is a valid firmware file. Then the file is downloaded to the unit. When the download is completed, the unit automatically resets, and the **Software download** message is displayed.

Figure 167: Software download message

8. After about a minute, the unit reset should be complete. Once this has occurred, the **Power** LED on the front of the unit should flash at frequent intervals. If the light is not flashing – it displays as a solid green or orange all the time – the reset was not successful. In this case, disconnect the unit from the power supply and then reconnect it. The unit resets again.

   Note: If the unit is disconnected from the power supply before the **HVG/MVG/IPC Download Utility** informs you that it has finished, the firmware may become corrupted and it may then be impossible to connect to the unit. (In this case, it may be necessary to perform a Catch Boot operation. For additional information, please refer to your system guide or consult your vendor.)

Catch Boot Option

CAUTION: This option is for technicians only.

In some cases, a download fails and it is not possible to access the unit afterwards in the usual way. This can occur, for example, if the download was interrupted before it was completed, if there is a problem with the flash memory of the unit, or if an incompatible firmware version was downloaded to the unit.

When this happens, you can usually reinstall the firmware using the *Catch Boot* option. This option uses the unit's built-in boot loader for downloading, and does not need the firmware in order to function.

NOTE: The catch-boot option uses an RS232 cable for download, and is much slower than LAN download.

NOTE: The Catch Boot option does not normally change any of the unit's settings. Nevertheless, it may sometimes cause the system settings to be lost.

⇨ *To see whether it is possible – or necessary – to reinstall firmware using Catch Boot:*

- Unplug the unit and then plug it back in. The power LED indicates whether Catch Boot is necessary and possible, as follows:

LED Behavior	Description
Flashes orange once when power is restored and then remains a solid color	Catch Boot can and should be performed.
Flashes orange/green every second	Catch Boot is not necessary, because the unit has a valid software version.
Remains solid green and does not flash orange	Catch boot cannot be performed.
Alternates between flashing quickly for a half second and remaining solid for a half second	There is a major error in the system. Contact technical support or your vendor. Do not perform Catch Boot.

⇨ *To reinstall firmware using the Catch Boot option:*

1. Connect the MVG 400 to your computer with an RS232 connection cable.

   Note: If you do not have an RS232 cable, please consult your vendor.

   Note: If a PTZ controller is connected to the RS232 port, disconnect it first.

   Note: You must have an RS232 connector on your PC in order to use the catch-boot option. If one does not exist, it is possible to purchase a USB-to-serial device, and connect the RS232 cable through it. Such devices are available in most computer stores.

2. Run the TVG_`download.exe` utility with the `-t` parameter.

To add the `-t` parameter, create a shortcut to TVG_`download.exe`, open its *Properties* and in the **Target** field add `-t` after the file name.

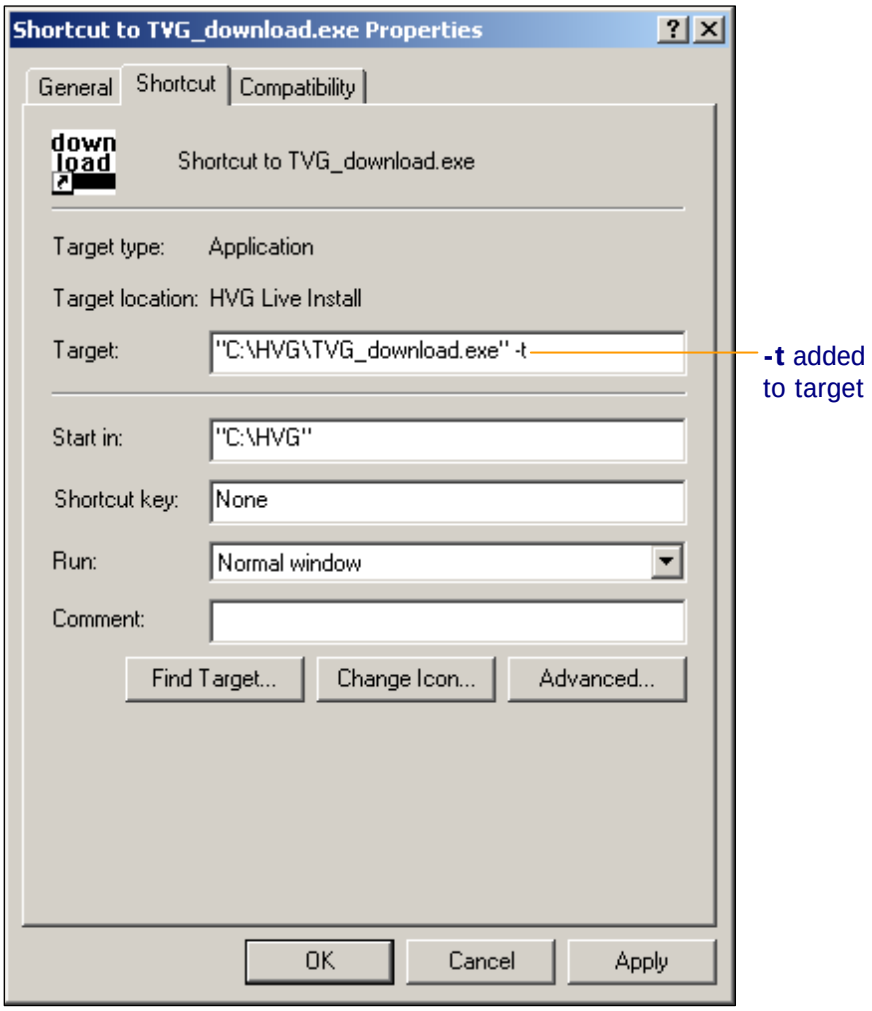


Figure 168: -t in the Target field of the shortcut properties

The **HVG Download Utility** opens, with the **Catch Boot** option available.

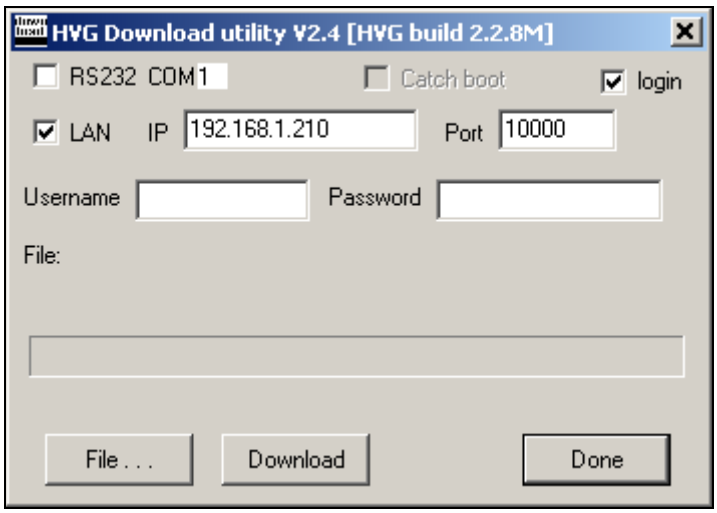
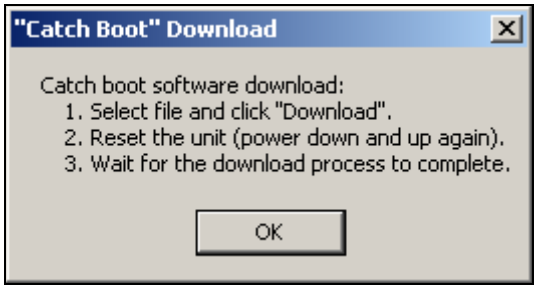


Figure 169: HVG Download Utility with Catch Boot Option

3. Select **RS232** and then enter the **COM** port number.
4. Select **Catch boot**. A message containing instructions for using the Catch Boot feature appears:


"Catch Boot" Download
Catch boot software download:
1. Select file and click "Download".
2. Reset the unit (power down and up again).
3. Wait for the download process to complete.
OK

5. Click **OK**. The message closes.

   Note: The Catch Boot operation does not perform a login; it is not necessary to fill in the **Username** and **Password** fields.

6. Click **File**. A file selection dialog box opens.
7. Browse to the TVX firmware file that you want to download to the unit, and then click **OK**. The file name appears in the window.

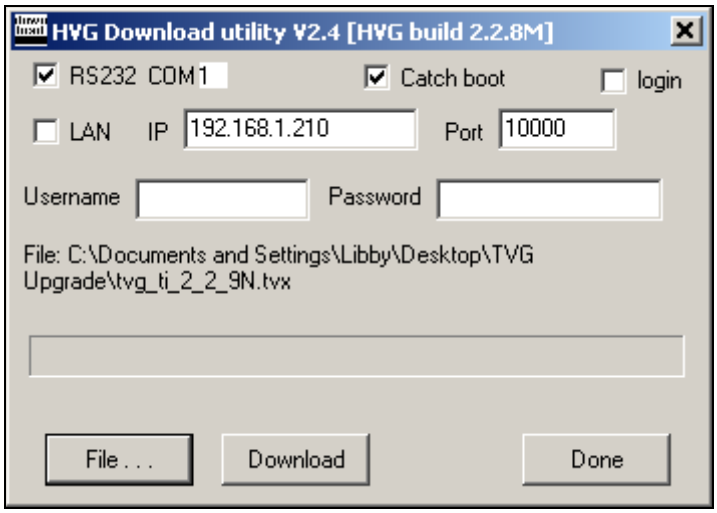


Figure 170: Catch Boot option with firmware file selected

8. Click **Download**.
9. Disconnect the unit from the power supply and then reconnect it. The download process starts automatically, and the new firmware is downloaded to the unit.

Upgrading Router Firmware

You can upgrade the router firmware directly from a website such as the SerVision website. Before you begin, ask your distributor for the correct address (URL).

NOTE: Do not upgrade the router firmware unless you are told to do so by technical support staff.

NOTE: It is recommended that you save all configuration changes and restart the unit to implement them before you upgrade the router firmware.

⇨ *To upgrade the router firmware:*

1. In the **Main Menu**, click **Diagnostics**, and then click **Upgrade Router**. The **Router Upgrade** screen opens:

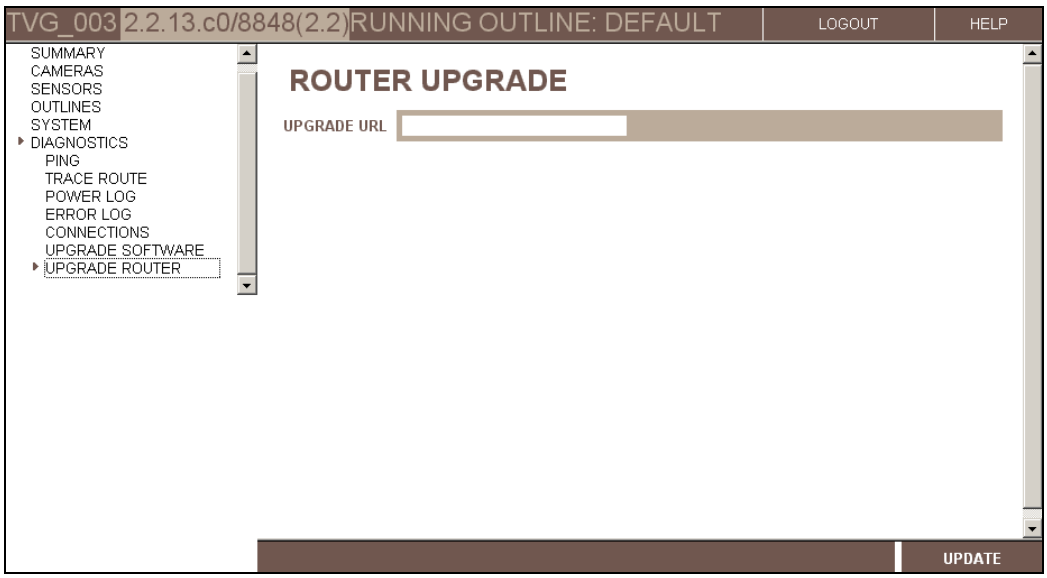


Figure 171: Router Upgrade screen

2. Under **Upgrade URL**, fill in the location of the new firmware file. For example, http://www.ru.com/ru.tgz. (Note: This is not the actual URL to use; consult your distributor for information about the correct URL.)

3. Click **Update**. The new firmware is uploaded to the unit and then the router firmware is updated.

   The upgrade process itself – once the file upload is completed – takes approximately three minutes. A timer indicates when the upgrade is completed. When it is completed, the **System Summary** screen is displayed. If this screen is not displayed within about six minutes of the end of the file upload, and you cannot connect to the unit via a client application or through the configuration utility, restart the unit by disconnecting it from the power supply and then reconnecting it. Bear in mind that interrupting the upgrade process before it is completed may cause the router to become completely inoperable, so do not restart the unit before the six minutes have passed. Note that if you are using a WiFi or cellular connection to upgrade the router firmware, it may take longer for the unit to reestablish the connection to the network.

System Diagnostics

The configuration utility contains various tools that can be used to monitor system functioning and to help solve connection and other system problems.

The **System Diagnostics** displays the current system statistics and contains tools that you can use to test the current connection and e-mail notification settings. Some of these tools, as well as additional system information, can also be accessed from the **Diagnostics** submenu.

NOTE: The use of these tools is only recommended for people with some understanding of computers and networking.

The following system information and diagnostic tools are available:

- **System Statistics:** Provides information about the unit's hardware, firmware, and time settings (see page 174)
- **Ping:** Tests remote connections from the MVG 400 to another device (see page 175)
- **Traceroute:** Traces the path used to connect remotely from the MVG 400 to another device (see page 179)
- **Notifications:** Sends an e-mail message to all of the recipients of e-mail notifications. This option is also available in the **System Summary** screen. For additional information notifications, see *SMS and E-mail Notifications*, page 81. For information about testing e-mail notifications, see *Testing Notification Settings*, page 86.
- **Power Log:** Lists every time the MVG 400 resets, and indicates what caused the reset and what type of reset it was; lists the system temperature when the temperature approaches a level that can cause damage to the unit
- **Error Log:** Lists recording errors reported by the MVG 400. This information may help SerVision technical support staff diagnose problems you are having with your system.
- **Connections:** Lists various network connections that are in place. This information may help SerVision technical support staff diagnose problems you are having with your system.

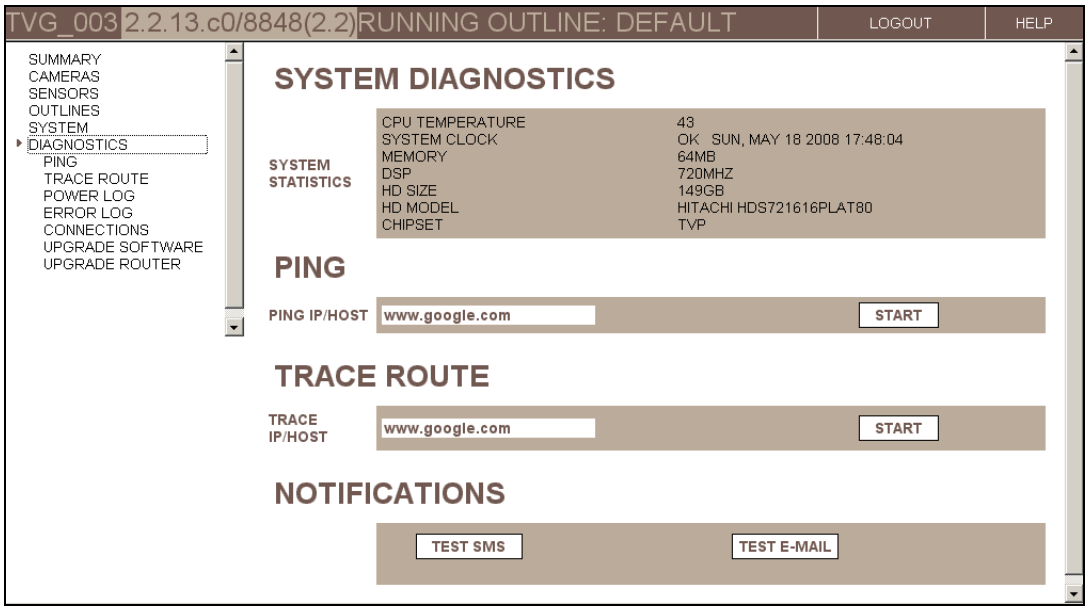


Figure 172: System Diagnostics screen

➪ *To open the System Diagnostics screen:*

- In the **Main Menu**, click **Diagnostics**.

System Statistics

The **System Diagnostics screen** includes a list of system statistics:

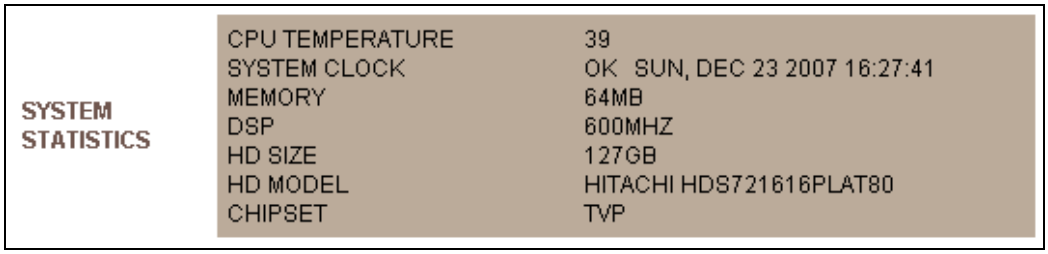


Figure 173: System Statistics

These statistics are explained below:

Statistic	Description
CPU Temperature	The current temperature of the MVG 400's CPU. If the temperature is too high, it is displayed in red.
System Clock	The status of the system clock; can be one of the following: • OK: Indicates the clock is set and functioning properly. The current date and time appear after the "OK" status. • ERROR: Indicates the clock is either not set or not functioning properly. Try resetting the clock manually (see *Setting the Unit Time*, page 57). If that does not solve the problem, contact technical support.

Statistic	Description
Memory	The size of the unit's RAM
DSP	The speed of the unit's digital signal processor
HD Size	The capacity of the unit's hard drive
HD Model	The model number of the unit's hard drive
Chipset	The unit's chipset identifier (This information may be requested by technical support staff if the unit malfunctions.)

Testing Remote Connections

Ping and Traceroute are tools that send simple messages to an IP address to test the connection between the device sending the message and the device with the given IP.

- Ping sends the message and waits for a reply. If a reply is received, we know the device with the given IP is running and can receive and transmit data. Using Ping, you can check whether your MVG 400 unit is running and can be accessed remotely.
- Traceroute sends the message and follows the route it takes from machine to machine in the network to reach its destination. This may help you identify routing problems or firewalls that are interfering with remote connections to your MVG 400.

NOTE: Some devices are configured not to respond to Ping requests. Therefore, the fact that a device does not respond to a Ping request does not prove unequivocally that the device cannot be accessed remotely. Similarly, since Traceroute makes use of Ping, the information returned by Traceroute may be incomplete.

Both Ping and Traceroute are available from any Windows Command Window. You can use them from Windows to test connections *from the PC* to other devices, such as the MVG 400. This is useful as an initial diagnostic tool in a situation in which you can connect to the MVG 400 unit for configuration and client access through a PC that is on the same LAN as the unit, but you cannot connect to the unit remotely.

You can run also Ping and Traceroute from the MVG 400 configuration utility to test connections *from the MVG 400* to other devices, such as SMS / SMTP servers and NTP servers.

Ping

Ping is a tool that sends a simple message to an IP address and waits for a reply. If a reply is received, we know the device with the given IP is running and can receive and transmit data. Ping is available from any Windows Command Window. Using Ping from a remote PC, you can check whether your MVG 400 unit is running and can be accessed remotely. You can also test remote connections from the MVG 400 unit to other devices by running Ping from the configuration utility.

NOTE: Some devices are configured not to respond to Ping requests. Therefore, the fact that a device does not respond to a Ping request does not prove unequivocally that the device cannot be accessed remotely.

⇨ *To test connections to the MVG 400 unit using Ping from the PC:*

1. On the PC, open a Command Window as follows:
   - Open the **Start** menu and click **Run**. A **Run** window opens.

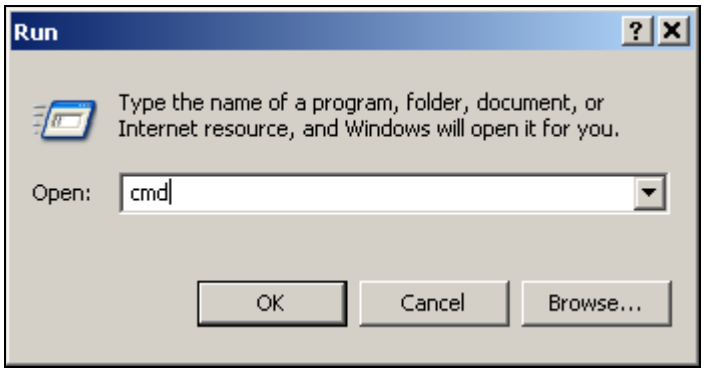


Figure 174: Run window

   - In the **Run** window, in the **Open** field, type **cmd**, and then click **OK**. A Command Window opens.

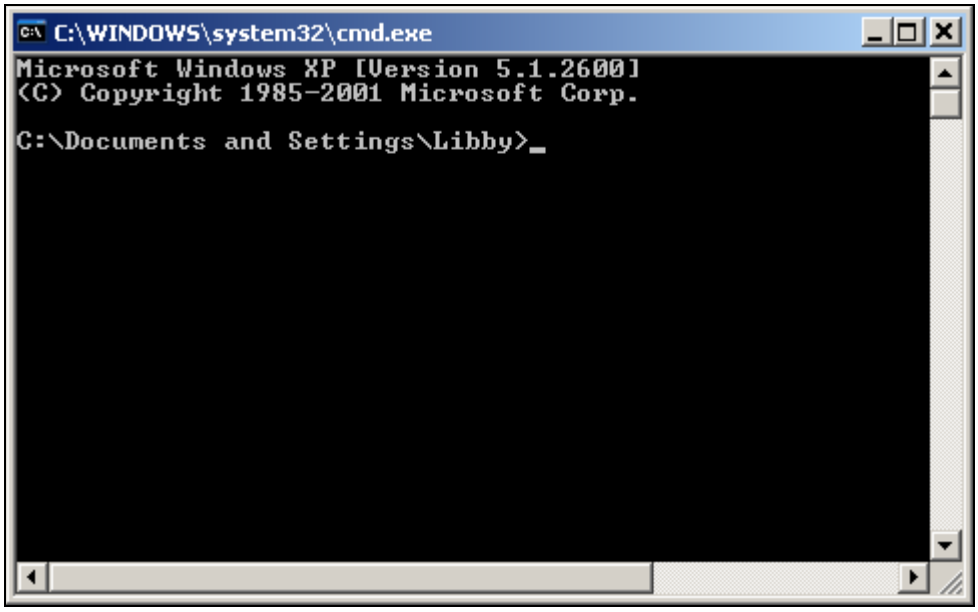


Figure 175: Command Window

2. In the Command Window, type **ping <IP>**, where <IP> is the IP address of the MVG 400. For example, type

   ping 192.168.3.60

3. Press **Enter**. The PC attempts to *ping* the MVG 400 by sending four test messages to it. The Ping command returns responses from the MVG 400 for each message that was

successfully sent, as in figure 176. If a target device does not respond to a message, the Ping command returns a "Request timed out" message, as in figure 177.

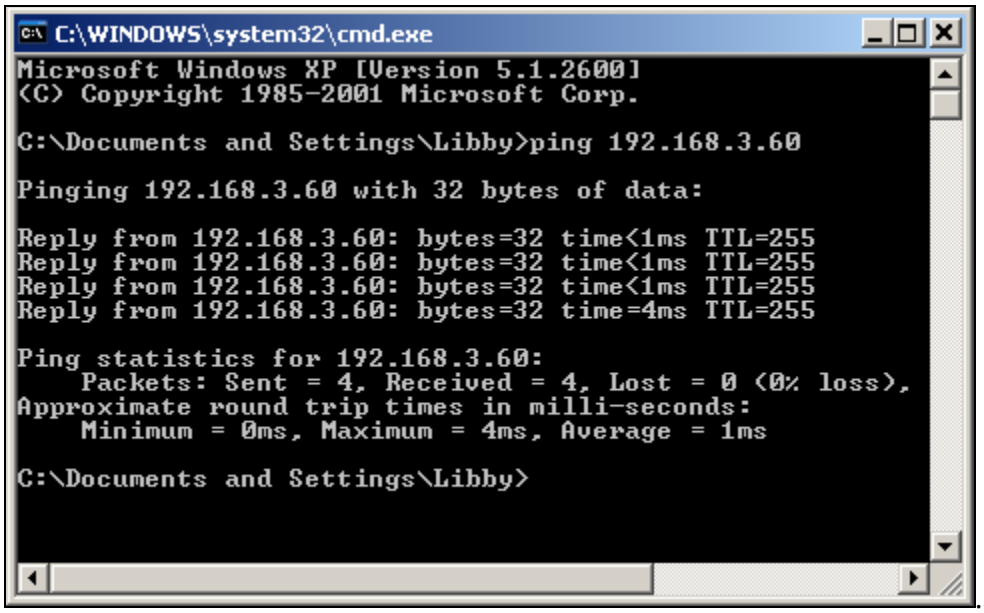

C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
C:\Documents and Settings\Libby>ping 192.168.3.60
Pinging 192.168.3.60 with 32 bytes of data:
Reply from 192.168.3.60: bytes=32 time<1ms TTL=255
Reply from 192.168.3.60: bytes=32 time<1ms TTL=255
Reply from 192.168.3.60: bytes=32 time<1ms TTL=255
Reply from 192.168.3.60: bytes=32 time=4ms TTL=255
Ping statistics for 192.168.3.60:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 4ms, Average = 1ms
C:\Documents and Settings\Libby>

Figure 176: Results of successful Ping

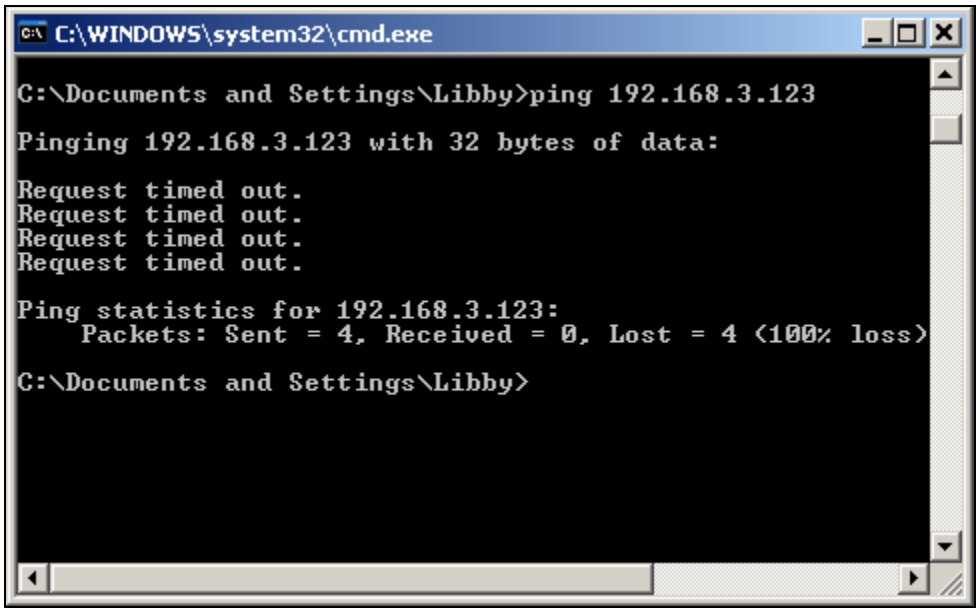

C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\Libby>ping 192.168.3.123
Pinging 192.168.3.123 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.3.123:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss)
C:\Documents and Settings\Libby>

Figure 177: Results of failed Ping

➪ *To test a remote connection from the MVG 400 unit to a host device using Ping:*

1. In the **System Diagnostics** screen, under **Ping**, in the **Ping IP/Host** field, fill in the URL or public IP address of the host device to which the MVG 400 should connect.

Figure 178: Ping request

Note: You can also access Ping from the **Diagnostics** submenu. The functionality is the same regardless of how you access it.

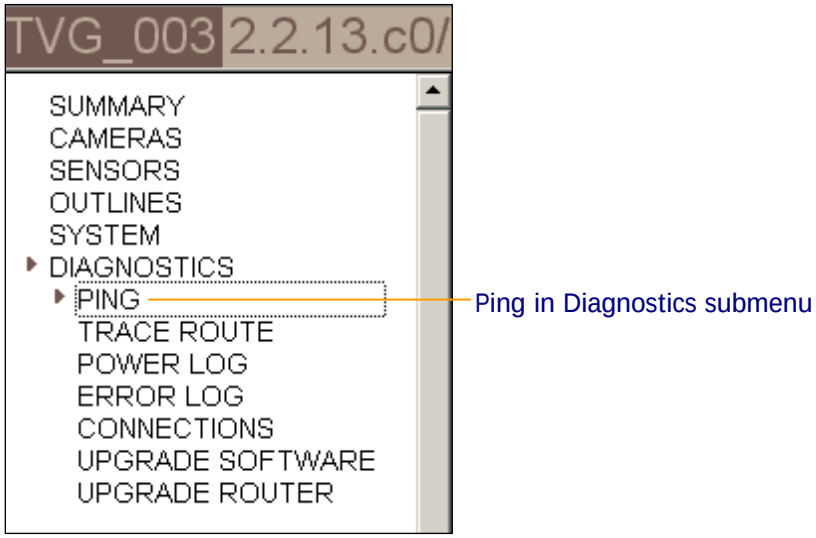


Figure 179: Diagnostics submenu

2. Click **Start**. The response screen opens. If the target device responds, the response, which includes the IP address of the device and a few other statistics, is displayed:

PINGING WWW.GOOGLE.COM (64.233.183.104):
PINGING 64.233.183.147 WITH 32 DATA BYTES
REPLY FROM 64.233.183.147, 32 BYTES, SEQ=1, TTL = 239
REPLY FROM 64.233.183.147, 32 BYTES, SEQ=2, TTL = 239
REPLY FROM 64.233.183.147, 32 BYTES, SEQ=3, TTL = 239
REPLY FROM 64.233.183.147, 32 BYTES, SEQ=4, TTL = 239
REPLY FROM 64.233.183.147, 32 BYTES, SEQ=5, TTL = 239

Figure 180: Ping with response from remote device

If the target device does not respond, an error code is displayed:

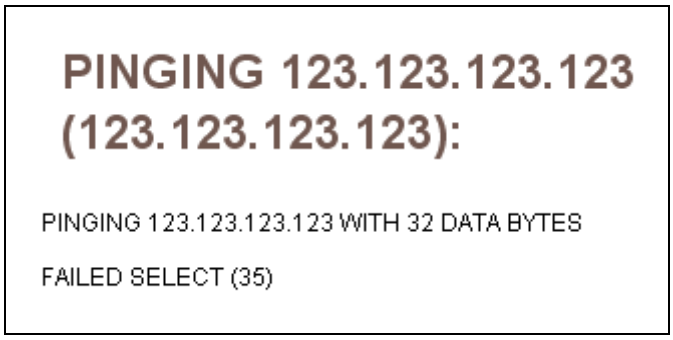


Figure 181: Ping to which the remote device did not respond

Traceroute

Traceroute is a tool that sends a simple message to an IP address and follows the route it takes from machine to machine in the network to reach its destination. This may help you identify routing problems or firewalls that are interfering with remote connections to your MVG 400. Traceroute is available from any Windows Command Window. Using Traceroute from a remote PC, you can check the route from the PC to your MVG 400 unit. You can also check the routes of remote connections from the MVG 400 unit to other devices by running Traceroute from the configuration utility.

NOTE: Some sites block Ping requests. Since Traceroute makes use of Ping, the information returned by Traceroute may be incomplete.

⇨ *To check the route from a PC to the MVG 400 unit using Traceroute:*

1. On the PC, open a Command Window as follows:
   - Open the **Start** menu and click **Run**. A **Run** window opens.

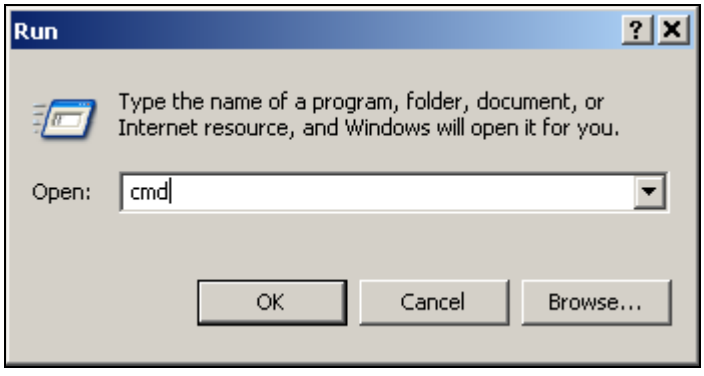


Figure 182: Run window

   - In the **Run** window, in the **Open** field, type **cmd**, and then click **OK**. A Command Window opens.

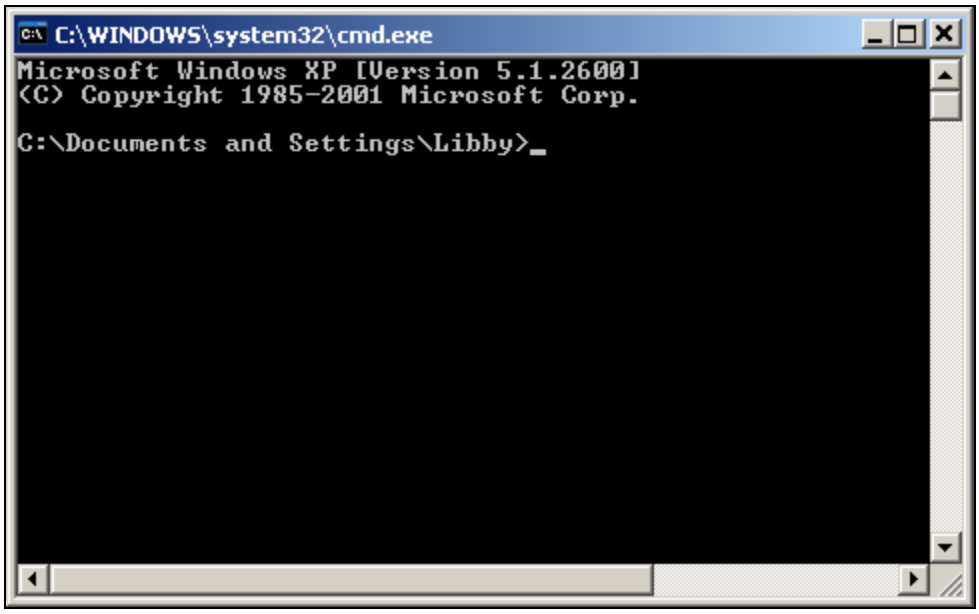


Figure 183: Command Window

2. In the Command Window, type **`tracert <IP>`**, where `<IP>` is the IP address of the MVG 400. For example, type

   `tracert 216.10.144.11`

3. Press **Enter**. Traceroute sends three packets, and follows their route for up to 30 steps from the sender to the target. For each step in the route, the time it took for each packet to arrive from the previous machine, and the IP of the current machine, are displayed.

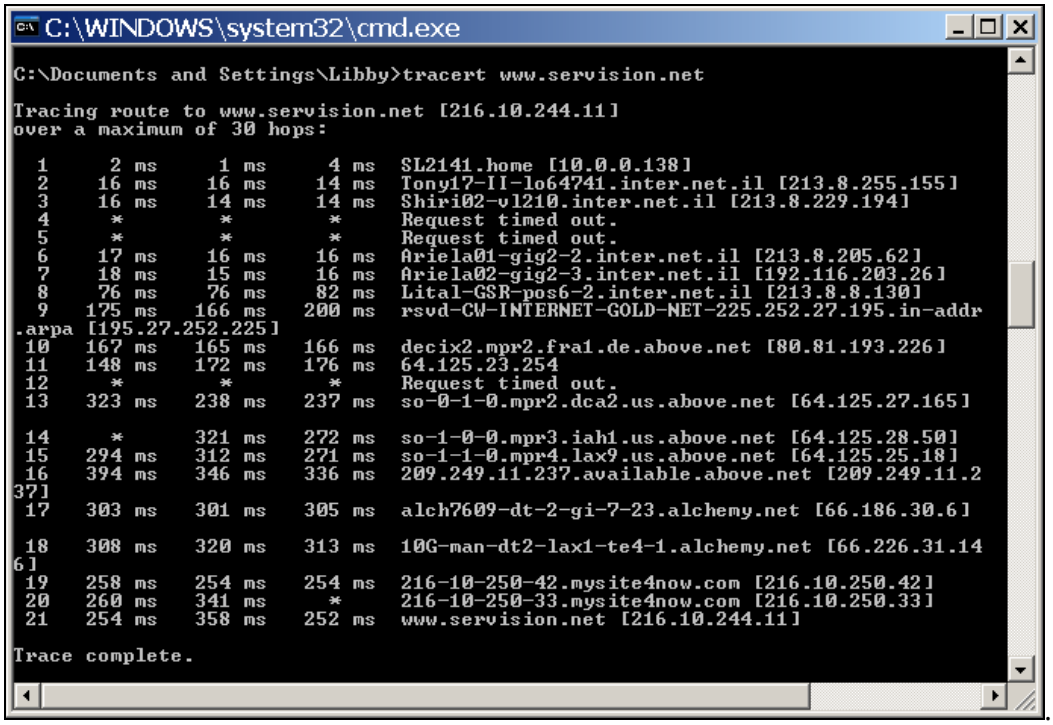

C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\Libby>tracert www.servision.net
Tracing route to www.servision.net [216.10.244.11]
over a maximum of 30 hops:
1 2 ms 1 ms 4 ms SL2141.home [10.0.0.138]
2 16 ms 16 ms 14 ms Tony17-II-lo64741.inter.net.il [213.8.255.155]
3 16 ms 14 ms 14 ms Shiri02-v1210.inter.net.il [213.8.229.194]
4 * * * Request timed out.
5 * * * Request timed out.
6 17 ms 16 ms 16 ms Ariela01-gig2-2.inter.net.il [213.8.205.62]
7 18 ms 15 ms 16 ms Ariela02-gig2-3.inter.net.il [192.116.203.26]
8 76 ms 76 ms 82 ms Lital-GSR-pos6-2.inter.net.il [213.8.8.130]
9 175 ms 166 ms 200 ms rsvd-CW-INTERNET-GOLD-NET-225.252.27.195.in-addr
.arpa [195.27.252.225]
10 167 ms 165 ms 166 ms decix2.mpr2.fra1.de.above.net [80.81.193.226]
11 148 ms 172 ms 176 ms 64.125.23.254
12 * * * Request timed out.
13 323 ms 238 ms 237 ms so-0-1-0.mpr2.dca2.us.above.net [64.125.27.165]
14 * 321 ms 272 ms so-1-0-0.mpr3.iah1.us.above.net [64.125.28.50]
15 294 ms 312 ms 271 ms so-1-1-0.mpr4.lax9.us.above.net [64.125.25.18]
16 394 ms 346 ms 336 ms 209.249.11.237.available.above.net [209.249.11.2
37]
17 303 ms 301 ms 305 ms alch7609-dt-2-gi-7-23.alchemy.net [66.186.30.6]
18 308 ms 320 ms 313 ms 10G-man-dt2-lax1-te4-1.alchemy.net [66.226.31.14
6]
19 258 ms 254 ms 254 ms 216-10-250-42.mysite4now.com [216.10.250.42]
20 260 ms 341 ms * 216-10-250-33.mysite4now.com [216.10.250.33]
21 254 ms 358 ms 252 ms www.servision.net [216.10.244.11]
Trace complete.

Figure 184: Results of successful Traceroute

If the target device is not reached after 30 steps, Traceroute times out.

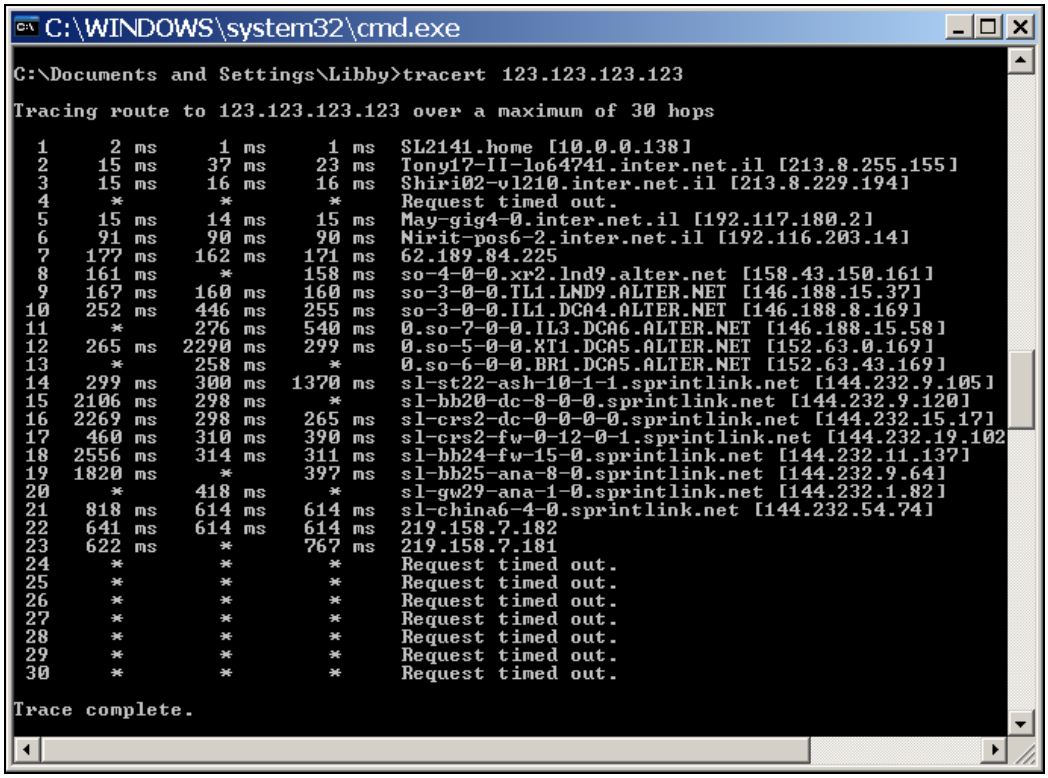

C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\Libby>tracert 123.123.123.123
Tracing route to 123.123.123.123 over a maximum of 30 hops
1 2 ms 1 ms 1 ms SL2141.home [10.0.0.138]
2 15 ms 37 ms 23 ms Tony17-II-lo64741.inter.net.il [213.8.255.155]
3 15 ms 16 ms 16 ms Shiri02-vl210.inter.net.il [213.8.229.194]
4 * * * Request timed out.
5 15 ms 14 ms 15 ms May-gig4-0.inter.net.il [192.117.180.2]
6 91 ms 90 ms 90 ms Nirit-pos6-2.inter.net.il [192.116.203.14]
7 177 ms 162 ms 171 ms 62.189.84.225
8 161 ms * 158 ms so-4-0-0.xr2.lnd9.alter.net [158.43.150.161]
9 167 ms 160 ms 160 ms so-3-0-0.TL1.LND9.ALTER.NET [146.188.15.37]
10 252 ms 446 ms 255 ms so-3-0-0.IL1.DCA4.ALTER.NET [146.188.8.169]
11 * 276 ms 540 ms 0.so-7-0-0.IL3.DCA6.ALTER.NET [146.188.15.58]
12 265 ms 2290 ms 299 ms 0.so-5-0-0.XT1.DCA5.ALTER.NET [152.63.0.169]
13 * 258 ms * 0.so-6-0-0.BR1.DCA5.ALTER.NET [152.63.43.169]
14 299 ms 300 ms 1370 ms sl-st22-ash-10-1-1.sprintlink.net [144.232.9.105]
15 2106 ms 298 ms * sl-bb20-dc-8-0-0.sprintlink.net [144.232.9.120]
16 2269 ms 298 ms 265 ms sl-crs2-dc-0-0-0-0.sprintlink.net [144.232.15.17]
17 460 ms 310 ms 390 ms sl-crs2-fw-0-12-0-1.sprintlink.net [144.232.19.102
18 2556 ms 314 ms 311 ms sl-bb24-fw-15-0.sprintlink.net [144.232.11.137]
19 1820 ms * 397 ms sl-bb25-ana-8-0.sprintlink.net [144.232.9.64]
20 * 418 ms * sl-gw29-ana-1-0.sprintlink.net [144.232.1.82]
21 818 ms 614 ms 614 ms sl-china6-4-0.sprintlink.net [144.232.54.74]
22 641 ms 614 ms 614 ms 219.158.7.182
23 622 ms * 767 ms 219.158.7.181
24 * * * Request timed out.
25 * * * Request timed out.
26 * * * Request timed out.
27 * * * Request timed out.
28 * * * Request timed out.
29 * * * Request timed out.
30 * * * Request timed out.
Trace complete.

Figure 185: Traceroute timed out after 30 steps

➪ *To trace the route from the MVG 400 unit to a host device using Traceroute:*

1. In the **System Diagnostics** screen, under **Traceroute**, in the **Trace IP/Host** field, fill in the URL or public IP address of the host device to which the MVG 400 should connect.

Figure 186: Traceroute request

Note: You can also access Traceroute from the **Diagnostics** submenu. The functionality is the same regardless of how you access it.

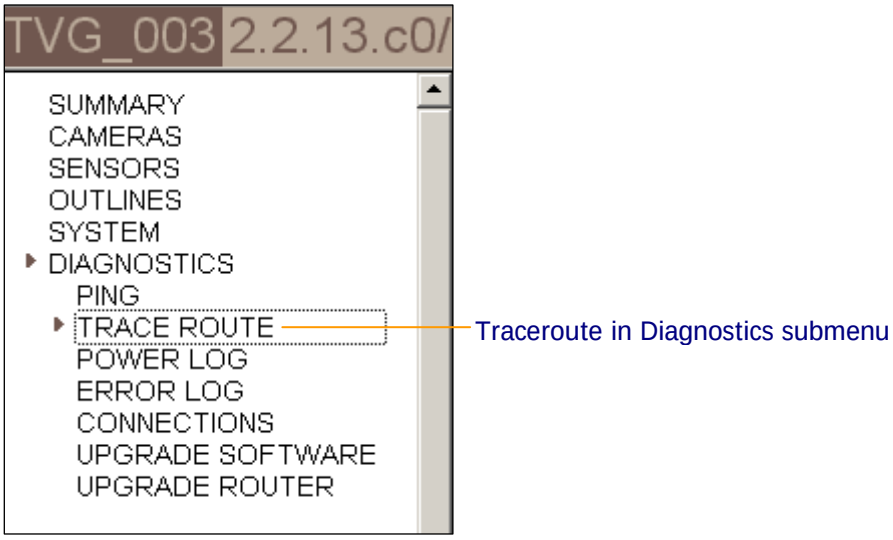


Figure 187: Diagnostics submenu

2. Click **Start**. The response screen opens. Traceroute sends three packets, and follows their route for up to 30 steps from the sender to the target. For each step in the route, the time it took for each packet to arrive from the previous machine, and the IP of the current machine, are displayed.

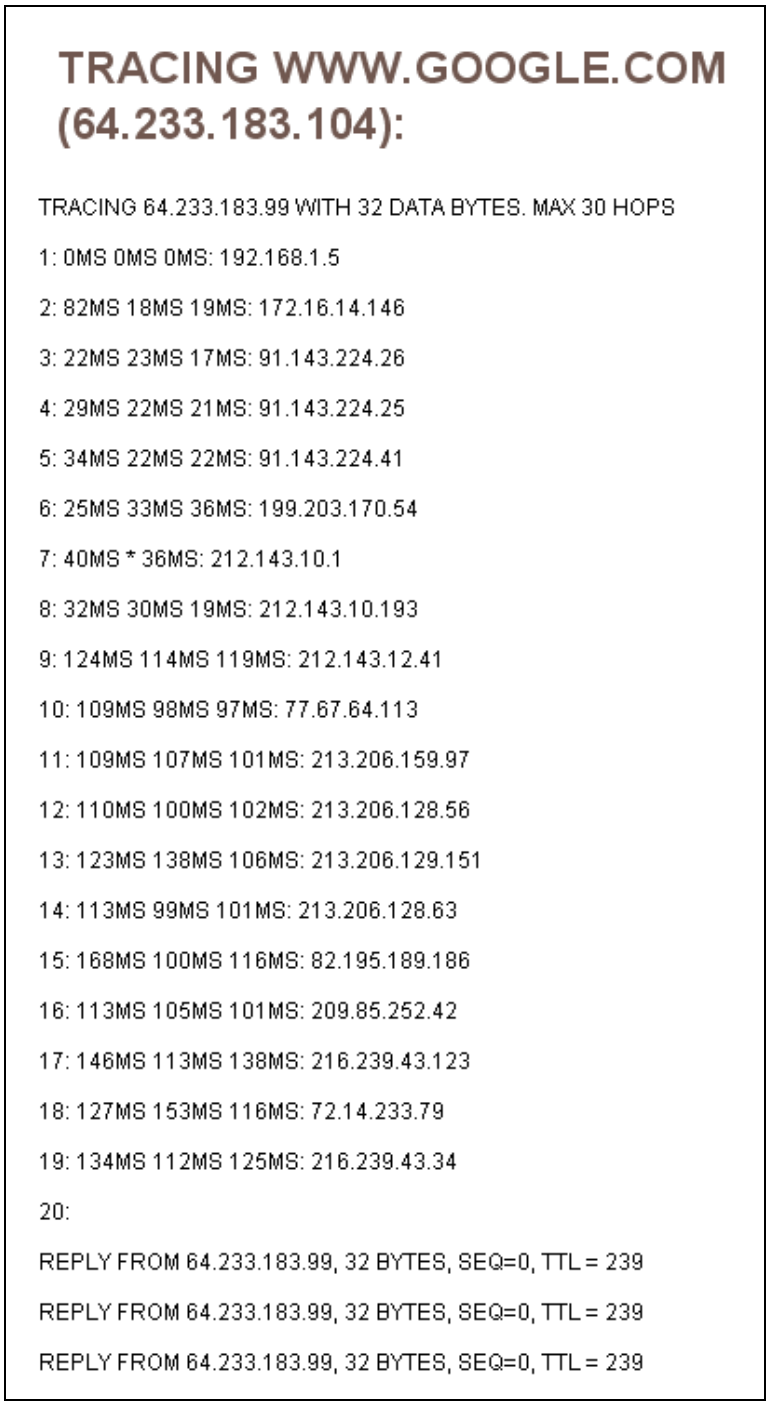


Figure 188: Traceroute results

If the target device is not reached after 30 steps, Traceroute times out.

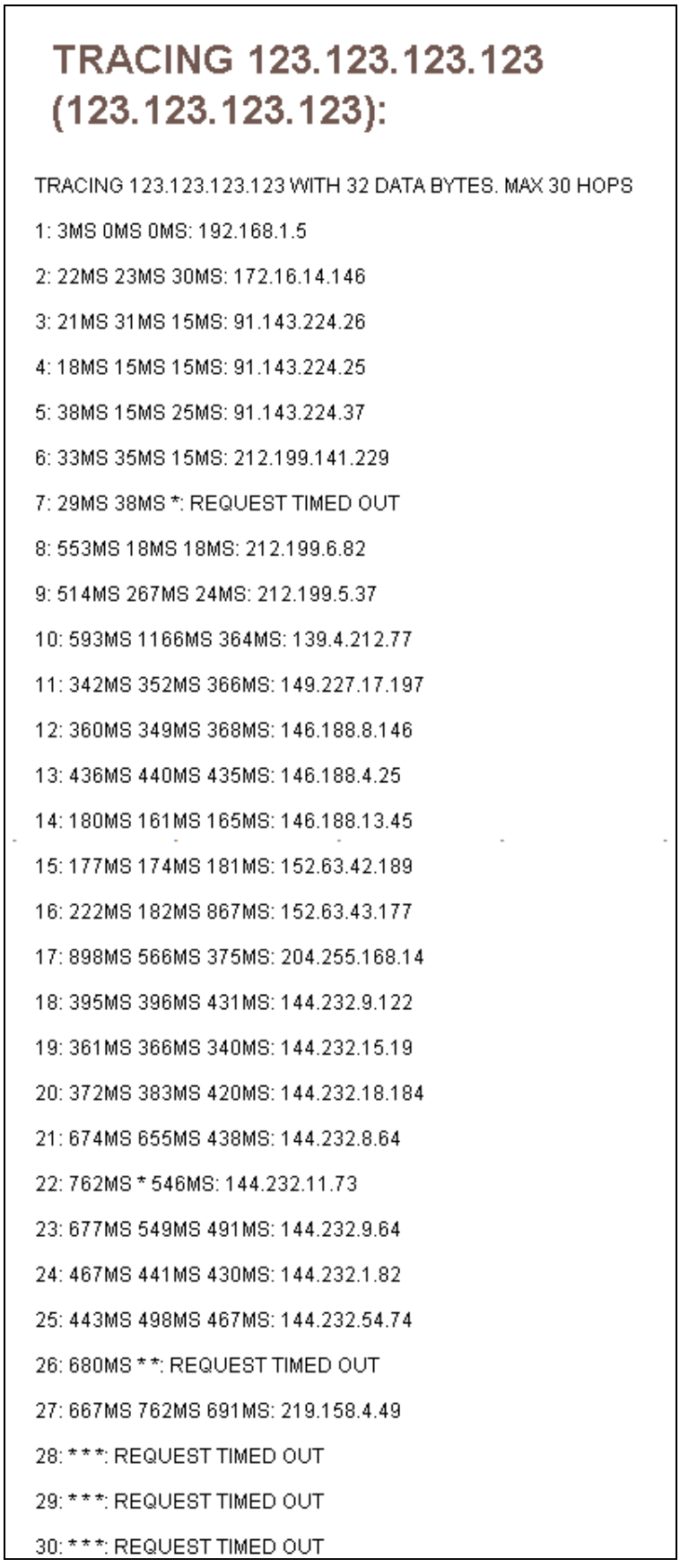


Figure 189: Traceroute timed out after 30 steps

Troubleshooting

This section contains a list of common problems and suggestions for finding solutions. If you cannot solve a problem you are having with the unit, please contact technical support.

NOTE: The technical support representative may ask you for the serial number of your unit. The serial number appears on the sticker on the underside of the unit, and is labeled *S/N*.

1. **Problem:**

   After modifying configuration settings and restarting the MVG 400, the unit cannot be accessed.

   Solution:

   Disconnect the power supply from the unit and then reconnect it.

   Additional information: *Resetting the Unit*, page 154

2. **Problem:**

   The firmware update process did not complete properly, and the MVG 400 unit cannot be accessed.

   Solution:

   Disconnect the power supply from the unit and then reconnect it. If the LED on the front panel of the unit displays as a solid green or orange (and is not flashing), reinstall the firmware using the Catch Boot operation.

   Additional information: *Catch Boot Option*, page 168

3. **Problem:**

   The unit can be accessed by PCs that are connected to the LAN, but not by remote client devices.

   Solutions:

   - Check that the relevant network settings are correct.

     Additional information: *LAN Settings*, page 63; *Modem*, page 65; *WiFi*, page 68

   - Check the firewall settings of the networks' gateways; ensure that the required port is open for incoming connections and that the port is forwarded correctly.

     Additional information: *About Ports*, page 48

4. **Problem:**

   A connection to a cellular network cannot be established.

Solutions:

- Ensure that all of the connection parameters are defined correctly in the **Modem Configuration** screen.
- If you are using a GSM modem, check if the SIM card is PIN-protected. If it is, ensure that the correct PIN is entered in the **Modem Configuration** screen.
- Contact your cellular provider to ensure that the modem settings are correct and the line is active.
- If LCP is enabled, try disabling it.

Additional information: *Modem*, page 65.

5. **Problem:**

   The user name and/or password required for configuring the unit are not known.

   Solution:

   Restore the factory settings to the unit and then reconfigure it.

   Additional information: *Restoring Factory Settings*, page 155

6. **Problem:**

   When client applications attempt to connect to the unit, an "Authentication failed" error is displayed in the client.

   Solution:

   Ensure that the client application is configured with the correct user name and password for *client access*. These values are normally different from the user name and password required for access to the configuration.

   Additional information: *Authentication*, page 80

7. **Problem:**

   TV-Out does not appear in the **Main Menu**.

   Solution:

   Contact your vendor for support.

8. **Problem:**

   Video does not display properly in the client application:

   - You cannot see any video.
   - The video image is distorted.
   - The frames flow upwards constantly.
   - A horizontal black stripe appears near the bottom of the client video display.

Solutions:

- Cameras are not configured for the proper video format. Ensure that all cameras are configured with the proper video format (PAL or NTSC).
- Cameras that use different video formats (PAL and NTSC) are connected to the MVG 400. All connected cameras should use the same video format.

Additional information: *Camera Settings*, page 96 (in particular, on the **Video Type** field, see page 98)

9. **Problems:**

   - Video of events that was supposed to be uploaded to an AVV server automatically (by means of the AVV feature) does not appear there.
   - A link to video that was uploaded to an AVV server appears in an e-mail notification, but when you click the link, the browser cannot find the file. The browser returns an error message – for example, “http error 404,” "The webpage cannot be found," or "Not Found."

   Solutions:

   - Ensure that the port forwarding and firewalls of the external networks and of the ftp’s network are configured to permit communication on the specified port.
   - Ensure that the AVV configuration settings are correct.
   - Wait a few minutes. Video of an event is only uploaded after the event ends. Processing and uploading also take some time. When the event is successfully uploaded, you will receive an additional e-mail telling you that the upload ended and including the same link. Click the link in this e-mail and the file should be available on the AVV server.
   - If the camera is set to record by event, ensure that the sensor (VMD, sensor, activator) triggering the AVV is defined as a trigger for recording in the camera’s configuration.

   Additional information: *Automatically Uploading Video to an AVV Server*, page 87; *Configuring Video Recording*, page 111

10. **Problem:**

    The standard video quality settings do not work well with a client application.

    Solutions:

    - In the video recording settings, select **Enable Advanced Settings**, and customize the bitrate and framerate. The customized settings will now be available in client applications for live as well as recorded video.

      Additional information: *Video Recording Settings*, page 110
    - Contact technical support for information about customizing stream properties.

11. Problem:

The unit does not record video even though it is configured to do so, or video that was recorded by the unit cannot be accessed by any of the client applications.

Solutions:

- In the **System Diagnostics** screen (or the **System** screen), check the **HD Size** and **HD Model**. If the size is 0 or the model is incorrect, there may be an internal hard-drive problem. Contact your vendor.

  Additional information: *System Statistics*, page 174

- Ensure that the unit time and the time zone are correct.

  Additional information: *Setting the Unit Time*, page 57

- In the **System Diagnostics** screen, check the **System Clock** status. If the status is "Error," try resetting the clock manually. If that does not solve the problem, contact technical support.

  Additional information: *System Statistics*, page 174; *Setting the Unit Time*, page 57

- Ensure that daylight savings time is configured in the same way on the PC from which you are connecting to the MVG 400 and on the MVG 400.

  Additional information: *Setting the Unit Time*, page 57

- If you have configured the unit for event-triggered recording, ensure that at least one sensor is selected as a trigger, that the selected sensors are functioning properly, and that one or more of the sensors detected events during the time period from which you attempted to view recorded video.

  Additional information: *Configuring Video Recording*, page 111

12. Problem:

The unit is connected to a LAN but cannot be accessed through the LAN.

Solutions:

- Ensure that the Ethernet (network) cable is fully inserted into the **Ethernet (Out)** connector on the rear panel of the MVG 400 unit.

  Additional information: *Connecting the MVG 400 to an External Network*, page 26

- Check whether the LEDs on the rear panel of the unit (in the upper-right corner) are blinking. If they are not, replace the Ethernet cable.

- Ensure the short Ethernet cable connecting the video gateway component of the MVG 400 to the unit's router is properly inserted into both connectors (the top-most **Ethernet** connector on the right and the connecter **Ethernet** connector immediately below it).

- If both Ethernet cables are functional and properly inserted into their connectors but the LEDs on the rear panel of the unit are not blinking, contact technical support.

13. **Problem:**

    The LEDs on the front panel of the unit light up, but the unit cannot be accessed by any external devices.

    Solutions:

    Restart the unit and observe the LEDs on the front panel. The normal power-up sequence includes a number of flashes of these LEDs: The Power (right) LED starts out green, flashes orange, turns green again, flashes five times, and, finally, when the start-up process is completed and the unit is operating normally, blinks every second. Before the five flashes of the Power LED, the HDD (left) LED flashes red once.

    - If the unit completes part of the start-up sequence and then restarts without completing the process – the unit restarts before the HDD LED flashes or after the five flashes of the Power LED – try reinstalling the firmware using Catch Boot.

      Additional information: *Catch Boot Option*, page 168

    - If the unit completes the entire start-up sequence and then restarts, try restoring the factory settings.

      Additional information: *Restoring Factory Settings*, page 155

    - If the Power (right) LED displays as a solid green at power-up, or displays as a solid green and then a solid orange but does not flash, the unit is unusable. Contact your vendor for additional assistance.

14. **Problem:**

    The unit does not turn on – the LEDs on the front panel do not light up and the unit cannot be accessed by any external devices.

    Solutions:

    - Check the power connections and cables.
    - Contact your vendor for assistance.

    Note: Do not open the MVG 400. It contains no user-serviceable parts.

15. **Problem:**

    The unit disconnects and reconnects from the MultiClient every few minutes.

    Solutions:

    - Check that the external LAN connection is connected to the **Ethernet(Out)** connector on the rear of the unit.
    - Contact your vendor for assistance.

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